

Red Rock/Lima Watershed Assessment Report
Dillon Field Office
December, 2007



Lima Peaks Allotment, Red Rock/Lima Watershed, 2007

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Introduction

This document is a land health assessment of the public lands administered by the Bureau of Land Management (BLM) in the Red Rock Watershed, Lima Watershed and a single allotment located in the Medicine Lodge Watershed. All of these allotments will be referred to as RRLW in this document.

This is the first in a series of documents: the Watershed Assessment Report, the Authorized Officer's Determination of Standards, and the appropriate National Environmental Policy Act (NEPA) documentation and subsequent Decision(s) changing management where needed.

The Assessment reports the condition and/or function of public land resources within the RRLW to the authorized officer. The authorized officer reviews the findings in this report to determine if the five standards of rangeland health are currently being met. The authorized officer then signs a Determination of Standards documenting where Land Health Standards are met and where they are not.

In addition to the condition/function assessment, the report also contains initial recommendations developed by the interdisciplinary team (IDT) during field assessments. The recommendations in the report focus primarily on livestock grazing, forest health and fuels management, but also include other programs, land uses, and activities. These include; noxious weed control, recreational activities, wildlife and fisheries habitat, and road maintenance. Impacts from all uses and programs were assessed and documented as part of this process.

The assessed condition, function and recommendations in the Assessment Report and Determination of Standards will be used in the NEPA process. An environmental assessment (EA) will be prepared addressing all resource concerns in the watershed. The EA will include all BLM-administered public lands covered in the assessment.

Alternative management will be analyzed wherever it is determined that:

- specific grazing allotments are not meeting the Standards
- allotments are meeting the Standards but have site specific concerns
- there are unhealthy forest conditions in the watershed
- fuels conditions are outside the natural range of variability
- there are other documented resources concerns

Also, if existing grazing management practices or levels of grazing use on public lands are determined to be significant factors in failing to achieve one or more of the five Standards, the BLM is required by regulation (43 CFR 4180.1) to make grazing management adjustments.

Implementation of new plans will begin in 2008, but full implementation of revised grazing plans, range improvement projects, forest treatments, and/or fuels projects associated with these plans may take several years.

The new plans will be developed in consultation and coordination with the affected permittees and lessees, agencies having lands or managing resources within the area and other interested parties.

The Dillon Field Office (DFO) completed a new Resource Management Plan (RMP) in February of 2006. This document will provide program guidance in the Dillon Field Office for the next 20 years. The RMP replaces The Dillon Resource Area Management Framework Plan (1979) and the Mountain Foothills Environmental Impact Statement (EIS) - Rangeland Management Program Summary (1981).

By working on a watershed basis, a broader landscape is considered and more consistent management can be applied. It is the BLM's intent to implement watershed management cooperatively. Any changes in livestock management will be implemented through grazing decisions that address allotments or groups of allotments with a common permittee. Forest health and fuels management treatments or projects and any other management projects or changes will be implemented through decisions appropriate for the respective programs.

As with all similar BLM decisions, affected parties will have an opportunity to protest and/or appeal these decisions.

Background

The Red Rock and Lima watersheds, as defined in the Dillon RMP, are two geographically separate but adjacent watersheds that are being combined into one Watershed Assessment document due to their relatively small amount of BLM administered land (52,330 acres). Along with Red Rock and Lima Watersheds, an additional allotment is included in the watershed assessment which is located in the Medicine Lodge Watershed. This allotment, called Ellis Peak, was not assessed in any prior watershed assessment due to logistical constraints. Red Rock Watershed, Lima Watershed and Ellis Peak Allotment will all be referred to as RRLW in this document. All the allotments assessed in the RRLW are located in Beaverhead County, Montana and drain portions of the Lima Peaks, Tendoy and Blacktail Mountains and the Rocky Hills area. The allotments in these watersheds all lie within Townships 8-15 South and Ranges 6-12 West, Montana Principal Meridian (M.P.M).

The assessment area covers public lands administered by the BLM as far north as the Clark Canyon Reservoir region which includes Clark Canyon to the east and a portion of the Rocky Hills to the west. The watershed assessment then follows south to the Idaho State line and includes the Snowline area. The allotments in the watershed assessment, except for Ellis Peak, are all found within a seven mile corridor of Interstate 15 and most are within four miles. The assessment area boundary is shown on appendix A maps and follows grazing allotment boundaries. Watersheds are defined and designated on maps by natural topographical boundaries (i.e. ridgelines/ drainages). Grazing allotment boundaries are determined by land ownership and these artificial boundaries may not follow topographical features. Therefore, some of the grazing allotments in the assessment area fall within one or more watersheds or hydrologic units.

Within the RRLW assessment area there are approximately 317,033 total acres of land, of which 55,582 are public lands administered by the BLM. Of the public land total, 55,428 acres are allotted for livestock grazing and 154 acres are unleased. This report addresses only land health conditions on public (BLM) land.

Vegetation in the watershed reflects the diversity of ecological conditions across the landscape. The dominant plant communities and habitat types change according to soils, precipitation, elevation, slope and aspect (direction the slopes are facing). A wide variety of vegetation originates from wetland and riparian species dependent on water and moist soils to sagebrush and grass dominated plant communities that thrive on dryer upland sites. Forested habitats cover the higher elevations. This diverse landscape provides habitat and structural niches for a wide variety and abundance of wildlife.

Fire History

Evidence of past wildfires is apparent throughout the assessment area. Fire scars on living trees, charred wood, and historic photographs indicate that fire has played an active role in shaping the existing vegetation. Variance in sagebrush stand structure demonstrates the effects of more recent wildfire events in sagebrush/grassland communities.

Fire occurrence records from the BLM, the U.S. Forest Service and the Montana DNRC indicate fire suppression resources have responded to approximately 24 wildland fires within the analysis area since 1981. Most fire starts were lightning caused. Due to changes in record-keeping and agency policy, this number represents the lowest possible number of fire suppression responses by federal and state agencies during this time period.

Several recent wildfires have occurred in the assessment area resulting in localized changes to the landscape. The Clark Canyon fire occurred in late August, 2006 and burned approximately 1,000 acres of BLM, State and private lands in the RRLW assessment area. The Snowline fire in 2000 and the Diamond Butte fire in 1988 burned 3,058 acres and 965 acres, respectively.

Prehistory and History of Red Rock and Lima Watershed

In conjunction with the Mountain Foothills Grazing EIS in the late 1970s, a Class II cultural resource inventory was completed for a 10% sample of lands within the DFO. The inventory located a mixture of prehistoric and historic sites throughout the RRLW. Overall, the watershed exhibited a lower than normal likelihood for cultural sites. Prehistorically, the RRLW has exhibited continuous occupation from approximately 10,000 years ago. Prehistoric sites within the watershed consist primarily of small habitation or procurement sites.

Historically, portions of the RRLW were explored by Lewis and Clark in the summer of 1805, eventually leading to further explorations during the fur trade in the 1830s. Early settlements were established based on stopping points on transportation routes along the Red Rock River. The town of Red Rock, originally established as a stage station along The Great Beaverhead Road, eventually became the terminus for the Utah and Northern Railroad, first in Dell and then in its present location. Armstead, now under Clark Canyon Reservoir, was the starting point for the Gilmore and Pittsburg Railroad. Mining may have occurred in the watershed as well but to a lesser extent.

Wilderness Study Areas

There are no wilderness areas in the RRLW. However, RRLW contains portions of the Bell-Limekiln Canyon Wilderness Study Area (WSA) which is managed in accordance with the *Interim Management Policy (IMP) for Lands Under Wilderness Review* (BLM Handbook H-8550-1). Management according to this policy is intended to ensure that wilderness values contained in this area are not impaired until such time as Congress either designates these areas as part of the National Wilderness Preservation System, or releases them from further consideration as wilderness. The Bell-Limekiln Canyon WSA contains 9,650 acres. Lands within this WSA have been recommended by the BLM for non-wilderness designation. Although this was BLM's recommendation to the President in 1991, the entire area currently remains under the management of the IMP.

Authorized Uses

Forest Products

Forest resources in the watershed have been utilized since the beginning of European settlement during the 1860s. Evidence in the form of old stumps can be found across all ownerships through forested habitats in the assessment area. There have been no forest management activities (timber harvest) on BLM-administered lands in the watershed.

Recreational Uses

The majority of lands within the RRLW are used yearlong for a variety of dispersed recreational uses including; hunting, off-highway vehicle use, camping, and mountain biking. The heaviest recreational use of these lands occurs during the big game hunting seasons, dramatically increasing the intensity of off-highway vehicle (OHV) use and camping. During this intense period of OHV use is when most of the unauthorized vehicle violations occur. The RRLW IDT identified several unauthorized OHV routes in the Roe West and Lima Peaks allotments.

Five commercial outfitters are authorized under Special Recreation Permits to conduct big game hunting in all or part of the RRLW. Total commercial use days associated with these permits is approximately 135 client days.

Mining and Oil Exploration

The RRLW generally has low potential for locatable minerals such as gold, silver, copper, etc. There is however, some potential for the development of a wide variety of other minerals. For example, many years ago a small gypsum mine existed in Little Sheep Creek. Production was limited and it is believed to have last operated in the 1950's. It is currently being reclaimed under the abandon mine lands program. There are currently no active Notices or Plans of Operation in the watershed.

Along with the gypsum mine in Little Sheep Creek, there are a number of abandon mines throughout the area. Most are small and none on the BLM are known to be at high risk for environmental damage. Some however may pose a risk to public safety.

The entire area has potential for saleable minerals such as gravel, decorative stone, etc. There are numerous locations throughout the watershed where mineral materials have been removed. Most of these sites are relatively small.

The area does have potential for oil and gas and over the years there have been various levels of exploration done. This includes a number of exploratory wells dug in the area mostly west of Interstate 15. A well was reportedly dug in the 1980s on state land in the McKnight Canyon area but was capped shortly after it was dug. None are producing at this time and no production has ever occurred from the wells.

Recently a Notice of Intent was filed with the BLM, the Forest Service, the State of Montana and with private land owners to do geophysical work in the RRLW. This will include about 36 miles of seismic line with shot holes drilled along the line approximately 220 feet apart. Work will likely occur in the summer of 2008. The activity is temporary and will result in little surface disturbance.

Livestock Grazing

There are fifteen individual operators that have grazing permits on 55,582 acres (24 allotments) of public land administered by the BLM in the watershed. The allotments are shown on the attached Red Rock Watershed Assessment Allotments Map. All allotments found within the Dillon Field Office have been categorized as *Improve* (I) *Maintain* (M) or *Custodial* (C) based on resource values and opportunities for improvement. BLM administered public lands provide a large proportion of the late spring, summer and fall forage base in the watershed. There are 8,932 animal-unit months (AUMs) of livestock forage allocated on public lands within the 24 allotments included in this assessment. This information is displayed on Table 1 for all 24 allotments that are included in this assessment.

The BLM has worked cooperatively with individual livestock permittees in the watershed for many years to develop Allotment Management Plans (AMPs) to improve grazing management. About 51% of the BLM administered lands in the watershed are managed under AMPs prescribing rest rotation, deferred rotation or deferred grazing management (Table 1). Less than 10% of the BLM administered acres are in custodial allotments, where BLM management inputs are minimal because of the small proportion of public land in the allotments (see Red Rock Watershed Assessment Allotments Map).

The stocking rate on BLM lands within the watershed averages approximately 6.2 acres/AUM and varies from 2.1 acres/AUM to 23.1 acres/AUM. This variance is influenced by soils, vegetative type, topography (aspect, elevation, and slope), distance from water and local weather. The kind and class of livestock authorized within all of the allotments is cattle (cow/calf pairs and yearlings).

Table 1 also shows the authorization number, season of use and the grazing system that has typically been in place since the Mountain Foothills EIS was completed in 1981 for each allotment.

Table 1. Livestock Grazing Allocation and Management

Allotment name, number , and category	Season of Use	Grazing System	BLM Stocking Rate	BLM AUMs	BLM Acres	State/ Private/ BOR ¹ Acres	Total Acres
Allotment E 10149 (C)	4/1 – 1/24	Season Long	26.1	59	1537	0	1537
Bell Canyon 20193 (I)	5/15 – 9/30	Season Long	11.1	640	7095	3241	10336
Cedar Creek 10124 (I)	5/15 – 6/30	Rest Rotation	15.2	309	4708	457	5165
Clark Canyon 30002 (I)	5/15 - 10/15	Deferred Rotation	5.6	1519	8526	8006	16532
Clark Canyon Iso. 20206 (I)	5/15 – 12/31	Season Long	9.3	15	140	530	670
Ellis Peak 10126 (I)	6/01 – 9/15	Deferred Rotation	5.7	567	3252	2542	5794
Lima Peaks 30270 (M)	7/11 – 10/15	Rest Rotation	6.5	236	1543	9302	10845
Little Sheep 10622 (C)	5/15 – 12/31	Season Long	15.1	8	121	0	121
North McKnight 20746 (I)	5/10 – 11/16	Season Long	11.2	61	682	0	682
Norris Canyon 20109 (M)	6/01 – 6/11 11/06 – 11/11	Deferred Rotation	2.9	108	317	319	636
Phalarope West 30204 (C)	3/01 – 5/01 12/26 – 2/28	Rest Rotation	13.7	75	1029	1274	2303
Radio T.V. 00150 (M)	10/01 – 11/30	Deferred Rotation	4.4	413	1822	2036	3858
Roe 20727 (M)	7/01 – 10/15	Rest Rotation	7.3	351	2557	2667	5224
Roe Isolated 20729 (C)	6/01 – 2/28	Season Long	6.7	12	80	0	80
Roe West Pasture 20728 (M)	4/10 – 5/10	Early Season Rest Rotation	5.0	1186	5972	696	6668
Seybold Ind. 20686 (C)	5/01 – 11/30	Season Long	23.1	7	162	0	162
Seybold Non-AMP 20187 (C)	5/01 – 11/30	Season Long	13.3	6	80	80	160
Shoshone Cove 20192	5/15 – 6/30	Rest Rotation	9.7	170	1655	1110	2765
Snowline AMP 30029 (I)	6/06 – 10/21	Rest Rotation	4.7	1989	9427	10909	20336
Snowline AMP Cust. 20607 (C)	6/1 – 10/31	Season Long	2.3	632	1440	0	1440
Snowline Iso. Tracts 20719 (C)	6/1 – 10/31	Season Long	2.1	164	350	0	350
Straight Creek Non-AMP 10697 (C)	5/15 – 12/31	Season Long	11.1	98	1084	0	1084
Truax Creek 20642 (C)	7/1 – 11/1	Season Long	4.9	77	377	0	378
Williams 20195 (I)	5/9 – 6/13	Rest Rotation	7.1	230	1626	1706	3332
BLM Totals			6.2 Avg.	8,932	55,582	44,875	100,457

¹Abbreviations: BOR=United States Bureau of Reclamation

Vegetative Treatments

Many of the vegetative treatments completed in the late 1960s and early 1970s were designed to improve rangeland forage production for livestock (See table 2). Sagebrush, largely unpalatable to cattle, was sprayed with chemicals in an effort to reduce cover of sagebrush and increase grasses. To ensure a quick response from grass species after a chemical spraying operation, BLM often plowed and drilled grass seed the following year. The goal of the chemical spraying and seeding operation was nearly always achieved and grass production greatly increased after a chemical treatment. However, in most cases, sagebrush recovered to pre-treatment coverage levels in 15-25 years. Management of BLM grassland and shrub communities in the 1960s and early 1970s was largely focused on maximizing palatable forage for livestock production. Now, sagebrush is considered a critical component to healthy rangelands. The table below summarizes past chemical spraying, plowing and grass seeding operations in the RRLW assessment area.

Table 2. Vegetative Treatments on BLM Administered Allotments

Allotment	Allotment #	Land Treatment	Acres Treated	Date
Clark Canyon	30002	Spray 2,4-D & Diesel	325	1971
Clark Canyon	30002	Spray 2,4-D & Diesel	130	1970-1972
Snowline	30029	Spray 2,4-D & Diesel	1,700	1968
Snowline	30029	Spray 2,4-D & Diesel	1,150	1968
Snowline	30029	Spray 2,4-D & Diesel	500	1971
Snowline	30029	Spray 2,4-D & Diesel	400	1971
Snowline	30029	Spray 2,4-D & Diesel	120	1972
Snowline	30029	Spray 2,4-D & Diesel	300	1970-1972
Snowline	30029	Plow & Seed Grass	120	1972
Snowline AMP Custodial	20607	Plow & Seed Grass	270	1972

Process

This assessment was done in accordance with the BLM regulations regarding Rangeland Health Standards (Standards) and other applicable guidance.

- BLM Manual H-4180-1, Rangeland Health Standards Handbook and Guidance for Conducting Watershed-Based Land Health Assessments
- Code of Federal Regulation 43 CFR, Subpart 4180
- Record of Decision (ROD) - Standards for Rangeland Health and Guidelines for Livestock Grazing Management (S&Gs) for Montana, North Dakota and South Dakota
- Healthy Forest Initiative
- Healthy Forests Restoration Act
- National Fire Plan

Rangeland Health Standards are described in detail in the ROD Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Montana, North Dakota, and South Dakota- Western Montana Standards.

The preamble of the Western Montana Standards states: “The purpose of the S&Gs are to facilitate the achievement and maintenance of healthy, properly functioning ecosystems within the historic and natural range of variability for long-term sustainable use.” Standards are statements of physical and biological condition or degree of function required for healthy sustainable lands. Achieving or making significant progress towards these functions and conditions is required of all uses of public lands as stated in 43 CFR 4180.1.

This assessment will report condition and/or function for the following five standards:

- Standard #1 Upland Health
- Standard #2 Riparian /Wetland Health
- Standard #3 Water Quality
- Standard #4 Air Quality
- Standard #5 Biodiversity

In addition, this assessment will report condition and/or function for forest health and fuels. Forest health and fuels can affect each of the five standards, but in this assessment will be reflected under Standard #5 Biodiversity, along with other factors that affect biodiversity. These assessments are made on an allotment scale, with the exception of Air Quality which is made at the watershed scale.

Condition/function statements regarding the Standards are made as:

- Proper Functioning Condition (PFC);
- Functioning At Risk (FAR) which is assigned a trend (up, down, static, or not apparent);
or
- Nonfunctioning (NF)

Land Health Standards are met when conditions across an allotment are at PFC or FAR with an upward trend. This is dependent on scope and scale and determined by the Authorized Officer.

Available trend monitoring data, existing inventories, historical photographs and standardized methodology are used by an IDT to assess condition and function. In addition, Ecological Reference Areas are identified by the IDT and used to compare health and productivity of similar sites and soils. Trend monitoring data, riparian assessment data and historic photographs used for this assessment are available at the Dillon Field Office.

Format

The Upland, Riparian, Air Quality, Water Quality, and Biodiversity Standards will follow the following format:

- **Affected Environment** - This section briefly describes the area and resources that were assessed.
- **Findings, Analysis and Recommendations** - This section lists the findings and discloses recommendations developed by the IDT during the field assessments.

Uplands

Western Montana Standard #1: “*Uplands are in Proper Functioning Condition.*”

Procedure to determine conformance with Standard:

The uplands were assessed on an allotment basis according to Interagency Technical Reference 1734-6 “Interpreting Indicators of Rangeland Health.” This qualitative process evaluates 17 “indicators” (e.g., soil compaction, water flow patterns, plant community composition) to assess three interrelated components or “attributes” of rangeland health: soil/site stability, hydrological function, and biotic integrity. The Natural Resource Conservation Service (NRCS) has developed Ecological Site Descriptions based on specific soil types, precipitation zones and location. They describe various characteristics and attributes including what vegetative species and relative percentage of each are expected to be present on the site. The IDT refers to these site descriptions while completing the upland evaluation matrix.

The IDT reviewed the long term trend study data, conducted extensive field surveys, and used the Indicators of Upland Health assessment process to assess the functionality of the upland habitat in the RRLW.

The RRLW was also evaluated for weed infestations using treatment records and inventories from the Dillon Field Office, Beaverhead County Weed Coordinators and the IDTs collective observations during the field assessments.

Affected Environment**Soils**

Soils in this watershed are affected primarily by climate (temperature and precipitation), topography (slope and aspect), and parent material (geology and geomorphology). The soils in this watershed are in the Frigid (generally below 6,400 feet elevation) and Cryic (generally above 6,400 feet elevation) soil temperature regimes. The assessment area receives from about 10 to 24 inches of average annual precipitation and falls into the Aridic and Ustic soil moisture regimes. Elevations range from about 5,400 feet to above 10,000 feet within the watershed boundary.

The soils within the watershed formed in alluvium, colluvium, residuum, and glacial till mainly from quartzite, limestone, sandstone, siltstone, andisite, rhyolite, and other rock sources. Soil textures are mainly sandy loams, loams, and clay loams; soil depths vary from shallow (less than 20 inches to root restrictive layer) to very deep (more than 60 inches to a restrictive layer); the relative amount of lime or calcium carbonate within the rooting zone, as measured by observable effervescence with hydrochloric acid, ranges from none to more than 40 percent; salinity and sodicity (alkalinity) occur within the assessment area to a minor extent; rock fragments, both on the surface and within the soil profile, range from none to more than 65 percent. Soil classifications and ecological sites within the assessment area reflect these soil physical and chemical properties and variables. The main soil Orders encountered within the assessment area include: Alfisols, Entisols, Inceptisols, and Mollisols.

Major landforms include: flood plains, stream terraces, outwash terraces, alluvial fans, escarpments, hills, moraines and mountain slopes. Slopes range from nearly level and

undulating (1 to 8 percent), rolling and hilly (8 to 30 percent), to steep and very steep (25 to more than 45 percent). Major Ecological Sites associated within the upland areas include: Shallow, Limy, Limy Droughty, Droughty, Droughty Steep, Dense Clay, Clayey, Loamy Argillic, and Loamy; within the river and stream areas the Ecological Sites include: Wet Meadow, Riparian Wet Meadow, Riparian Subirrigated, Subirrigated, and Overflow.

Upland Plant Communities

Sagebrush and grassland areas are considered uplands for purposes of this report. According to satellite imagery, 61 percent of the watershed is classified as sagebrush-steppe or grassland uplands (28 percent grasslands, 33 percent sagebrush). Forest and woodland habitats are discussed under Standard #5 – Biodiversity.

The variety and distribution of plant communities and seral stages in the watershed area is a function of climate, geology, and soil combined with:

- historic uses (e.g. grazing, mining)
- short term weather patterns
- disturbance regimes (e.g. drought, fire, floods and herbivory)

Current vegetative cover was calculated using satellite imagery. Table 3 summarizes the different cover types on all land ownerships within the RRLW.

Table 3. General Cover Type Summary

Cover Type	BLM Acreage	% of BLM Acreage	Total Watershed Acreage	% of Total Acreage
Forests	6,446	11	33,298	10
Grasslands	12,729	23	90,593	28
Sagebrush/Mountain Shrubs	35,148	63	160,694	51
Riparian/Mesic Shrubs	399	1	5040	2
Aspen	535	1	1289	1
Other (Rock /Water/Ag)	325	1	26,119	8
Totals	55,582	100	317,033	100

-Cover type amounts are calculated from satellite imagery data and may under or over estimate certain vegetation types.

The following discussion focuses on existing vegetation rather than potential natural vegetation or climax vegetation. The plant association concept that describes existing vegetation regardless of successional status has been used to characterize the most common upland plant communities in the RRLW. Plant association descriptions were found in Cooper et al, 1995, Cooper et al, 1999, and Mueggler and Stewart, 1980. Common plant names are used when describing vegetation and plant associations. The scientific names of all plants mentioned or discussed in this document appear in Appendix A.

Grasslands

Grasslands are defined as plant associations where shrub canopy cover is less than 5% and perennial graminoid vegetation constitutes at least 50% of the total herbaceous canopy cover.

The needle-and-thread / blue grama grassland occurs on the valley floors and gently sloping coalesced alluvial fans in the RRLW. It occupies some of the lowest elevations in the watershed and extends as high as 6,300 feet as small patches on coarse-textured soils within a mosaic of more mesic vegetation. Cover of the diagnostic species needle-and-thread may be as high as 80% while blue grama, the other diagnostic species is only sporadically encountered in the RRLW. Examples of this association were encountered on the Clark Canyon, Williams & Bell Canyon allotments.

Bluebunch wheatgrass / Sandberg bluegrass grasslands are common on moderate to steep slopes and alluvial fans throughout the RRLW and usually have a warm aspect. Elevations range from 5,800-7,500 feet. Forb cover is low but diverse. Common species include phlox, sandwort, stiffleaf penstemon and stemless mock goldenweed. Mosses are rare, but lichens may be common in some stands. Along the east front of the northern Tendoy Mountains, this vegetation often forms mosaics that include shallow drainages and bald limestone outcrops. Representative examples of this association were observed in the Roe, North McKnight & Bell Canyon allotments.

Idaho fescue / bluebunch wheatgrass grasslands occur on moderate to steep, predominantly southerly-facing slopes in the Tendoy Mountains at 6,000-7,500 feet. On lightly grazed sites the combined cover of Idaho fescue and bluebunch wheatgrass can exceed 70% which was the case on the higher elevation sites in the Radio TV & Roe West allotments (see Photo 1). Forbs are diverse and abundant; western yarrow, phlox and sandwort are usually present. Mosses and especially lichens may be common.



Photo 1- Idaho fescue / bluebunch wheatgrass grassland in the Radio TV Allotment, July 2007

Farther upslope between 7,400-9,200 feet, the Idaho fescue / bearded wheatgrass association is the most common grassland type within the watershed. These mesic, productive grasslands often occur in snow catchment areas such as lee slopes just below ridge lines. Idaho fescue, bearded wheatgrass and mountain brome dominate light to moderately grazed sites while Kentucky bluegrass is common in sites that have experienced heavier grazing pressure. The common forbs prairie smoke, sticky geranium, lupine, sandwort and white sagebrush contribute to high cover of tall and low forbs and high species diversity. Moss and lichens are rare. This association was noted on upper slopes and gentle ridge tops in the Roe, Clark Canyon and Bell Canyon allotments.

Shrublands

Shrublands are defined as plant associations where shrubs compose at least 5% of the canopy cover.

The mountain big sagebrush / Idaho fescue shrubland was encountered in most allotments and is probably the most common shrub type in the RRLW. It occurs on slopes and upper terraces from 6,000-8,500 feet. Mountain big sagebrush canopy cover varies from 10-70% while the dominant grass, Idaho fescue, averages nearly 50%.

Gentle to moderate slopes and terraces with warm aspects and slightly more mesic moisture regimes were found in the East Fork pasture of the Lima Peaks allotment. This particular topographic and moisture niche supports examples of mountain big sagebrush / basin wildrye where stands occur at 6,900-7,200 ft or higher in the Red Rock River drainage. Mountain big sagebrush canopy cover is 20-30% and grass cover is 70-90%. Dominant grasses are basin wildrye and Idaho fescue; bearded wheatgrass and mountain brome are common in higher elevation stands. Kentucky bluegrass occurs in stands that have been heavily grazed. Forbs have 10-20% cover, but diversity is only low to moderate. Western yarrow, shy wallflower and slender cinquefoil are present in many stands. Mosses may be common in some stands.

Mountain big sagebrush / bluebunch wheatgrass primarily occurs on south-facing slopes in the RRLW. Mountain big sagebrush is the dominant shrub with 10-40% canopy cover. Grass canopy cover is generally 40-70%. Bluebunch wheatgrass is the dominant species; needle-and-thread and Sandberg bluegrass are other common species. Forb canopy cover is 10-30%, and diversity is low to moderate. Plains pricklypear, cutleaf daisy and phlox are common species. Mosses and lichens are often common. Representative examples of this association were observed in the Snowline and Bell Canyon allotments and in the Law Creek drainage in the Ellis Peak allotment.

The basin big sagebrush / western wheatgrass shrubland is common on gently sloping to nearly level stream terraces at 5,900-7,200 ft in the RRLW. Basin big sagebrush is the dominant shrub with canopy cover ranging from 10 to 50%. Grass cover is high to nearly continuous in most stands. Western and/or thickspike wheatgrass are the dominant and diagnostic grass species. Basin wildrye may be abundant in stands receiving little or no grazing pressure while Kentucky bluegrass is common in heavily grazed stands. Forb cover is usually 10% or less, and diversity is low to moderate. Western yarrow, common dandelion and pussy-toes are common forbs and mosses and lichens are often also present.

The black sagebrush / bluebunch wheatgrass shrubland is common in the Tendoy Mountains on gentle to steep slopes, alluvial fans and terraces in areas of shallow soils with calcareous parent material. It is generally present on slopes with south or west-facing aspects at 5,500-7,200 feet. Black sagebrush is the dominant shrub with coverages up to 40%. Rubber rabbitbrush, fringed sagewort and broom snakeweed are usually common. Bluebunch wheatgrass is well represented and usually the dominant grass with canopy cover of 10-40%. Forb cover is sparse, but diversity is moderate; Plains pricklypear, phlox, stiffleaf penstemon are often present. Mosses are absent, and lichens are rare. This association was observed in foothills of the Roe West, Bell Canyon and North McKnight allotments.

Three-tip sagebrush / Idaho fescue is common on gentle to moderate slopes and ridges at 6,300-7,500 feet in the RRLW. Three-tip sagebrush canopy cover is typically 10 – 30% and grass cover is generally high, 60-80% in most stands. Idaho fescue is the dominant grass, but thickspike wheatgrass, bluebunch wheatgrass, and prairie junegrass are also common. Forb cover and diversity is moderate; common species include western yarrow, prairie smoke, lupine, phlox, common dandelion and pussy-toes. Shoshone Cove, Cedar Creek and Snowline allotments support examples of this association.

Alkali sagebrush / thick-spike wheatgrass is found on gently sloping terraces and lower slopes of alluvial fans as well as broad low ridges at 6,600 – 7,200 feet usually in areas of calcareous parent material. Alkali sagebrush is the dominant shrub with 10 – 40% cover while thick-spike wheatgrass is the dominant grass with 10 – 50% cover. Forb cover is usually < 10%, and diversity is low. Common species include phlox and pussy-toes. This plant association was observed in the west side of the Ellis Peak allotment. It is also common in the Snowline area.

Special Status Plants

Upland habitats within the RRLW currently support at least twenty sensitive plant species. These plants and a brief description of their habitat and any known threats are presented in Table 4.

Table 4. Sensitive Plants Known or Suspected on BLM Upland Habitats

Sensitive Plant Species	Habitat	Threats in the RRLW
Ballhead Ipomopsis	Sagebrush steppe	Probably not threatened by anthropogenic sources
Beautiful Bladderpod	Open mountain mahogany or limber pine woodlands	May benefit from disturbances that reduce competition
Bitterroot Milkvetch	Sagebrush steppe	May be vulnerable to impacts associated with cattle grazing
Buff Fleabane	Ridge crests, slopes and outcrops	Probably not threatened by anthropogenic sources
Chicken Sage	Sagebrush steppe	Probably not threatened by anthropogenic sources
Cushion Townsendia	Exposed ridges and slopes near or above treeline.	Probably not threatened by anthropogenic sources
Cusick's Horse-mint	Steep, loose talus below limestone outcrops	Probably not threatened by anthropogenic sources
Green Molly	Saline or alkaline soil in valleys and foothills	May be vulnerable to impacts associated with cattle grazing

Hoary Phacelia	Steep talus slopes, often associated with mountain mahogany	Probably not threatened by anthropogenic sources
Idaho Fleabane	Rocky or gravelly slopes and ridges in alpine zones	Probably not threatened by anthropogenic sources
Lemhi Beardtongue	Sagebrush steppe and open coniferous forests	May be vulnerable to impacts associated with cattle grazing, road maintenance and fire suppression
Lesser Rushy Milkvetch	Sagebrush steppe and grasslands	May be vulnerable to impacts associated with cattle grazing
Linearleaf Fleabane	Sagebrush steppe	May benefit from disturbances that reduce competition
Mat Buckwheat	Sagebrush steppe	Probably not threatened by anthropogenic sources
Meadow Pennycress	Sagebrush steppe	May benefit from disturbances that reduce competition
Railhead Milkvetch	Sagebrush steppe	May be vulnerable to impacts associated with cattle grazing
Railroad Canyon Wild Buckwheat	Open, often barren slopes and ridgetops	Probably not threatened by anthropogenic sources
Sitka Columbine	Open coniferous, cottonwood, or aspen forests	Probably not threatened by anthropogenic sources
Taper-tip Desert-parsley	Moderate to steep slopes and canyon bottoms, often associated with mountain mahogany	Probably not threatened by anthropogenic sources
White-stemmed Globe-mallow	Sagebrush steppe	Probably not threatened by anthropogenic sources

Noxious Weeds and Cheatgrass Infestations

Three noxious weeds of concern, leafy spurge, spotted knapweed and houndstongue, were found in the RRLW.

Leafy spurge, an aggressive noxious weed, is found in three small infestations in the RRLW. The first is a small infestation that was discovered by the assessment team in the southeast corner of Allotment E. Another small infestation is found near a gate in the southern portion of the Cedar Creek allotment, where ownership changes from public to private. The third is the largest infestation and is located mostly on state land within the Shoshone Cove allotment. This infestation has been aggressively treated by both Beaverhead County and the BLM since 2003, and in 2007 only a few scattered plants were found.

Spotted knapweed is one of the more aggressive noxious weeds in the area administered by the Dillon Field Office. A large infestation (200 acres) was found in 2002 in the Bell Canyon allotment. This infestation was initially treated by helicopter in 2002 and again in 2005 with ground treatments applied by both BLM and Beaverhead county crews in 2003, 2004, and 2006. A reduction in infestation size has been seen but due to the ruggedness of the terrain, new satellite infestations have been found in the area. Other infestations are mostly small in size and are found scattered throughout the watershed, primarily along roads accessible to the public. Due to its location, the potential is high for knapweed to be spread by vehicles, livestock, wildlife, recreation and other activities.

Houndstongue, a noxious weed that is toxic to animals due to high levels of alkaloids contained in the plant, is found scattered in trace amounts in various locations within the watershed along roads, trails, and streams. Because of its seeds ability to cling to hair and clothing, the potential is high for it to be spread rapidly within the watershed.

Other noxious or invasive weeds present primarily as small patches and/or widely scattered infestations in the watershed include cheatgrass, common mullein, black henbane, and Canada thistle. Cheatgrass is found in small patches throughout the watershed primarily on south and west facing slopes where there has been some past disturbance. Black henbane is found primarily along roads within the area. Canada thistle is common in riparian bottoms that have had past disturbance.

Since 1989, BLM has been involved in cooperative control efforts with Beaverhead County. Private land owners in the RRLW have also been involved in control efforts. Throughout this period, the goal has been to prevent new noxious weed infestations and control or eradicate existing infestations in Beaverhead County using Integrated Pest Management.

Table 5 shows the herbicide treatments applied in the RRLW, including the aerial treatments mentioned above, during the past four years.

Table 5. Weed Treatments

Year	Acres Treated	Acres Inventoried
2004	50	900
2005	240	1,000
2006	40	1,500+
2007	80	1,500+

Due to the small size of the knapweed infestations, the harshness of the climate and the elevation of the valley, no biological controls have been released. However, a release of both a seed head weevil (*Larinus minutus*) and a root boring weevil (*Cyphocleonus achates*) is being considered for a trial plot in the Bell Canyon allotment.

Findings and Analysis

Most of the upland plant associations encountered on sagebrush and grassland sites in the RRLW are well within the natural range of variation for the associated ecological site. The majority of the “Rangeland Health Evaluation Worksheets” completed by the IDT found few departures from the ecological site description for the sites assessed. More often than not, when slight to moderate departures from expected conditions were encountered it was the integrity of the biotic community that had been altered.

For example, as grazing pressure increases on the lower elevation grasslands, so does the cover of fringed sagewort and broom snakeweed. These subshrubs were observed in most of the lower grassland associations, but never at a coverage that would indicate more than a slight to moderate departure from expected conditions for the “functional/structural groups” health indicator.

Kentucky bluegrass, an aggressive competitor with native species, is present in most basin big sagebrush types, the mesic mountain big sagebrush associations and in Idaho fescue - bearded wheatgrass grasslands. At this point in time, the presence of Kentucky bluegrass in these localized plant associations is a concern, but still isn't considered more than a moderate departure from expected conditions for invasive plants.

Rubber rabbitbrush, green rabbitbrush and gray horsebrush are common shrubs found on numerous ecological sites throughout the watershed. In a few cases the combined canopy coverage of these shrubs exceeded 5% which is higher than expected for most sites. These higher cover values occurred in isolated instances near water troughs, salt grounds and fence corners and in a few larger areas that had recently burned.

Woodland succession or conifer encroachment is occurring at various rates throughout the RRLW along the shrubland/woodland interface. The mountain big sagebrush / Idaho fescue shrubland appears to be the plant association most susceptible to invasion by conifers.

Initial encroachment of Rocky Mountain juniper in Allotment E and the Cedar Creek allotment is an example of early woodland succession. Mid to late stages of woodland succession were evident in the Bell and Limekiln Canyons WSA where Douglas-fir is suppressing understory vegetation and is beginning to dominate sites with tree canopies approaching full coverage.

Scattered patches of cheatgrass were encountered throughout the RRLW and appear to be increasing in both size and distribution. Twenty-three years ago cheatgrass was noted to be "scattered along the lower portion of the slope" in lower Bell Canyon (USDI 1984). In 2007 cheatgrass was observed well up most south-facing slopes in the upper canyon. The largest cheatgrass-infested area observed in the RRLW covered approximately 200 acres on the Dutch Hollow South pasture of the Snowline allotment. The mountain big sagebrush / bluebunch wheatgrass association appears to be particularly susceptible to invasion by cheatgrass.

Members of the IDT visited all the grazing allotments, as well as the unallotted public land in the RRLW during 2007 and completed 15 *Rangeland Health Indicator Evaluation Matrices* on various ecological sites and plant associations. In addition, 17 Daubenmire trend studies and 25 permanent photo plots established in the 1970s and early 1980s were duplicated in 2007 to help determine vegetative trend. The data collected was summarized and compared to baseline data providing supporting information for interpreting the upland indicators (see Table 5, Upland Qualitative Assessment Summary).

All the uplands in the watershed are functioning properly and meeting the Standard for Upland Health. Table 5 outlines the findings at 15 sites throughout the watershed where the IDT completed the Indicators of Rangeland Health evaluation matrix. A moderate departure from expected conditions is analogous to a FAR rating (DOI BLM 2000). Upland sites that were found to be in the -none to slight- or -slight to moderate- departure from expected conditions category are considered to be in PFC.

Table 6. Findings of Upland Health Qualitative Assessments

Allotment Name	Ecological Site	Plant Association	Degree of Departure from Expected		
			Soil Site Stability	Hydrologic Function	Biotic Integrity
Allotment E 10149 (C)	Silty 10-14	Bluebunch wheatgrass/Idaho fescue	None to slight	None to slight	None to slight
Bell Canyon 10512 (I)	Shallow Loamy 15-19	Mountain big sagebrush/Idaho fescue	None to slight	None to slight	Slight to Moderate
Bell Canyon 10512 (I)	Silty-droughty 15-19	Bluebunch wheatgrass/Sandberg bluegrass	None to slight	None to slight	None to slight
Cedar Creek 10124(I)	Silty 10-14	Idaho fescue/bluebunch wheatgrass	None to slight	None to slight	None to slight
Clark Canyon 30002 (I)	Limy 10-14	Mountain big sagebrush/ bluebunch wheatgrass	None to slight	None to slight	None to slight
Ellis Peak 10126 (I)	Silty 15-19	Mountain big sagebrush/Bluebunch wheatgrass	Slight to moderate	Slight to moderate	Slight to moderate
Lima Peaks 30270 (I)	Silty 15-19	Mountain big sagebrush/Idaho fescue	None to slight	None to slight	None to slight
North McKnight 20746 (I)	Silty Limy 10-14	Mountain big sagebrush/Bluebunch wheatgrass	Slight to moderate	Slight to moderate	Slight to moderate
Norris Canyon 20109 (M)	Silty 15-19	Idaho fescue/bluebunch wheatgrass	None to slight	None to slight	None to slight
Roe West 20728 (M)	Loamy-Droughty 15-19	Idaho fescue/bluebunch wheatgrass	None to Slight	None to Slight	Slight to moderate
Roe West 20728 (M)	Silty- Limy 10-14	Black Sagebrush/Bluebunch wheatgrass	None to Slight	Slight to moderate	None to Slight
Shonshone Cove 20192 (M)	Limy 10-14	Mountain big sagebrush/Idaho fescue	None to slight	None to slight	None to slight
Snowline AMP 30029 (C)	Silty 15-19	Mountain Big Sagebrush/Bluebunch wheatgrass	Slight to moderate	Slight to moderate	Slight to moderate
Snowline AMP 30029 (C)	Silty-Drought 10-14	Mountain Big Sagebrush/Bluebunch wheatgrass	None to slight	None to slight	None to slight
Williams 20195 (C)	Limy 10-14	Needle-and-Thread/Blue grama	None to slight	None to slight	None to slight

All the study sites were rated as PFC by the IDT. Based on the information presented in the study sites, historical photographs, allotment tours by the IDT and actual grazing use reports, the uplands on all 24 allotments within the watershed were rated as PFC. It appears that existing management is generally improving or maintaining upland health conditions on all allotments and quantitative monitoring data on file supports the findings of the IDT. The 154 acres of BLM

that are unleashed were also found to be functioning properly. However, occurrences of noxious and invasive species, including spotted knapweed and cheatgrass, are a concern on a localized scale. Tall cool-season bunchgrasses, specifically bluebunch wheatgrass, are slightly reduced in localized areas. The south pasture of Allotment E showed a loss in vigor of tall cool-season grasses but was not severe enough to warrant a FAR rating for the entire allotment. In general, the overall plant species composition matches the Ecological Site Guides.

Evidence of erosion in the RRLW as witnessed on the Clark Canyon allotment, appears to be from inherent geologic conditions or remnant of historical livestock impacts but generally matches what is expected for that ecological site. Past livestock impacts are probably due to long-term spring and summer livestock grazing in these areas.

The upland plant composition along the forest/sagebrush ecotone and within mid-elevation aspen stands within the RRLW is changing toward more conifer dominated. Aerial photographs show the spread of coniferous forest species downslope onto benches previously dominated by sagebrush and cool season grasses. The spread of primarily Douglas-fir and Rocky Mountain juniper can be attributed, in part, to the reduced frequency of wildfire. This is discussed in more detail in the Standard # 5 - Biodiversity and Forestry/Fuels sections of this report.

Special Status Plants

Competition from invasive, introduced species, and noxious weeds, especially spotted knapweed, yellow sweet clover and cheatgrass, may pose the biggest threat to the sensitive plant species that are found in upland habitats in the RRLW.

Green molly, Lemhi beardtongue and the milkvetches are palatable and are sensitive to intensive grazing, especially during spring and early summer. Browsing was noted on the majority of Bitterroot milkvetch inflorescences observed on the Cedar Creek and Shoshone Cove allotments in 2007. Repeated herbivory, particularly between mid-May and mid-July may lead to population declines. Rest-rotation grazing regimes may allow enough recruitment to maintain stable populations of these palatable sensitive plants.

Recommendations for Upland Health:

1. Consider changes in timing, duration, frequency and/or intensity of grazing in the south pasture in Allotment E. Rest and/or more deferment should be incorporated into the management of this allotment.
2. Consider combining the Cedar Creek, Williams & Shoshone Cove allotments & treating each allotment as a pasture in a three treatment rest-rotation grazing system.
3. Continue to address localized weed infestations cooperatively with Beaverhead County and other landowners and partners as appropriate. Continue the existing education effort on weed identification with permittees and other people who use this area.
4. Maintain or initiate aggressive treatment efforts on the three known leafy spurge infestations to reduce their vigor and possibly eradicate these infestations.

5. Continue aggressive treatment of the spotted knapweed infestations in RRLW, and attempt to establish a viable biocontrol site in the Bell Canyon allotment.
6. Using the results from test plots to be set up in 2008, develop appropriate measures to reduce the size and expansion of cheatgrass infestations within the RRLW.

Riparian and Wetland Areas

Western Montana Standard #2: *"Riparian and wetland areas are in proper functioning condition"*

Procedure to determine conformance with Standard:

RRLW contains both lotic (flowing, i.e. stream) and lentic (pond, wet meadow) systems. Several complimentary monitoring and evaluation methodologies were utilized in the assessment of these systems to determine conformance with Standard # 2. Lotic and Lentic Riparian Area Management Assessment Methodologies (TR 1737 15 and 16), also known as PFC Assessment Methodologies, were used to evaluate riparian systems.

Monitoring data obtained through Montana Riparian Wetland Assessment (MRWA) and riparian coverboard methodologies was used to help support the IDT in the assessment process. Prior to the IDT's assessment, BLM personnel re-read established coverboard plots and inventoried streams and wetlands in the watershed using the MRWA method. Dillon Field Office staff assessed streams and wetlands during the 2007 field season.

Many of the resources within the DFO stream and wetland database have been identified based upon mapped information, aerial photos, and USGS Quads. As part of the RRLW assessment process, the resource inventory has been updated based upon field notes, photographs and ground survey.

Federal protection of wetlands and riparian systems, including springs, became official policy under the authority of two Executive Orders issued in 1977. The majority of developed springs in RRLW were developed prior to the issuance of these orders or other federal laws, directives or regulations for the management and protection of wetlands (Mitch 1986). Current management direction requires minimizing wetland degradation as well as preserving and enhancing natural and beneficial values. This includes maintenance of hydrology. Alternatives analyses are conducted to determine whether it is feasible to develop springs and where spring boxes might be best located to maintain resource values. Management, restoration and conservation of springs are resource management objectives for the BLM.

Affected Environment

The RRLW assessment area is primarily located within the Red Rock Watershed. The RRLW assessment also includes the Ellis Peak Allotment which is located in the Medicine Lodge Watershed Assessment area. Some allotments evaluated in the RRLW drain to Horse Prairie Creek, Beaverhead River and Clark Canyon Dam. The Beaverhead River, Clark Canyon

Reservoir, Horse Prairie Creek and Red Rock River are water quality limited streams or water bodies according to Montana Department of Environmental Quality (DEQ).

Major streams draining to the Red Rock include Junction Creek and its tributaries, Little Sheep Creek and Dutch Hollow. Morrison Creek and Law Creek drain to Medicine Lodge Creek. Clark Canyon Creek drains to the Beaverhead River just below Clark Canyon Dam.

There are approximately 27 miles of stream within the RRLW. Tables 8 through 10 show the lotic, lentic, and wet meadow habitats and their conditions.

Wetland and soil survey information within the assessment area is limited. The Montana/Dakotas BLM is working with and providing funding to NRCS and Montana DEQ to expedite the completion of a soil survey for Beaverhead County. Soil survey information will include wetland soils. DEQ is also working to develop National Wetland Inventory (NWI) information. NWI information will greatly assist the BLM to quantify wetland resources.

Baltic rush / clustered field sedge wetland association is common in sub-irrigated swales and along some stream terraces. Wetter sites dominated by herbaceous vegetation support water sedge, beaked sedge, or Nebraska sedge associations. When these herbaceous dominated wetlands are disturbed, or begin to dry out, Kentucky bluegrass, meadow barley, and to a lesser extent foxtail barley tend to increase. Forbs that may be present in wet meadows with a history of disturbance include Montana sweet pea, common dandelion, pussy-toes, common yarrow and Canada thistle.

Geyer willow / beaked sedge plant association is the most common shrubland found along perennial stream reaches. Booth and/or bebb willows are usually found in association with this type. Very wet sites supporting shrubs may be dominated by planeleaf willow while drier sites often support shrubby cinquefoil / tufted hairgrass associations. Coyote willow is a pioneer species that is often found on sites subject to frequent disturbance and/or flooding such as reach 933 on Junction Creek.

Remnants of a narrow-leaf cottonwood / redosier dogwood forest are still present along portions of lower Clark Canyon Creek, but much of this riparian habitat is progressing toward a Rocky Mountain juniper / redosier dogwood woodland. Examples of Douglas-fir / redosier dogwood, spruce / sweetscented bedstraw and quaking aspen / redosier dogwood riparian plant associations were observed in the Lima Peaks, Snowline and Clark Canyon allotments.

Noxious Weed Infestations

Houndstongue, a noxious weed that is found mostly in disturbed or moist sites, is found scattered in trace amounts in riparian areas throughout the watershed. Infestations are most numerous around willows and other shrubs, where the seed is deposited after being brushed from the transporting agent. Because of its seeds ability to cling to hair and clothing, the potential is high for it to be spread rapidly within the watershed.

Dyers woad, a winter annual, biennial or short-lived perennial, was first discovered in the RRLW along the railroad tracks at Snowline Ranch. During the 1990s, high moisture runoff into

Junction Creek transported seeds from the site downstream as far as Lima, Montana. Since that time scattered plants have been found along the banks of Junction Creek. Because of the plants ability to go from rosette to seed set in 2 weeks and the number of seeds it produces (up to 10,000 per plant), Dyer's woad is a major invasive plant threat to native vegetative communities in the watershed.

Other noxious or invasive weeds present as small widely scattered infestations in the riparian areas include black henbane, and Canada thistle.

Special Status Plants

Riparian and wetland habitats within the RRLW currently support at least six sensitive plant species. These plants and a brief description of their habitat and any known threats are presented in Table 6.

Table 7. Sensitive Plants Known or Suspected on BLM Riparian & Wetland Habitats

Sensitive Plant Species	Habitat	Threats in the RRLW
Alkali Primrose	Moist to wet alkaline meadows near headwaters streams	May be vulnerable to impacts associated with cattle grazing and hydrologic alterations
Alpine Meadowrue	Moist alkaline meadows and sometimes along stream channels	May be vulnerable to hydrologic alterations
Idaho Sedge	Subirrigated soils and streamside meadows associated with low-gradient streams, springs & seeps	May be vulnerable to impacts associated with cattle grazing and competition with Kentucky bluegrass
Meadow Lousewort	Wetlands and riparian meadows	May be vulnerable to hydrologic alterations
Mealy Primrose	Saturated, often calcareous wetlands and wet meadows	May be vulnerable to impacts associated with cattle grazing and hydrologic alterations
Rocky Mountain Dandelion	Open riparian and wetland areas	May be vulnerable to competition from the introduced dandelion

Developed Springs

Historically, the sole purpose for spring developments was to provide water for livestock. Devices aimed at protecting the spring source, such as a livestock enclosure, were minimal. Past spring construction techniques often altered hydrology and diminished resource values. The IDT did not do a comprehensive inventory of spring sources which often date back fifty years or more. The IDT did look at a number of developed springs. Although some developed springs were functioning as originally planned, certain spring's exhibited reduced wetland function due to soil compaction and/or loss of vegetation. Leaking troughs, poor location of troughs, and/or missing wildlife escape ramps were also noted during the assessments. Well managed springs have the potential to support rare plants, macro invertebrates, insects, fish, springsnails, amphibians and migratory birds as well as providing water for wildlife and livestock.

According to the Range Improvement Project database there are 25 developed springs in the RRLW. Eleven of these are in the Clark Canyon Allotment. Six springs are in Snowline AMP, three in Roe, two in Bell Canyon, one in Cedar Creek and one in Lima Peaks Allotment.

Findings and Analysis

Riparian condition/function of streams, springs, ponds, potholes and wet meadows is placed into one of five categories: Proper Functioning Condition (PFC), Functioning At Risk with an Upward trend (FAR Up), Functioning At Risk with a static trend or no apparent trend (FAR), Functioning At Risk with a Downward Trend (FAR Down), or Non Functional (NF) using the lentic and lotic methodologies described above.

Riparian status of perennial streams and meadows/ ponds is shown in the following tables 8 through 10. Riparian condition is also shown on the North Red Rock Riparian Reaches, South Red Rock Riparian Reaches and Red Rock Assessment Ellis Peak Riparian Reaches Maps.

Table 8. Riparian (Lotic) Resources in the Red Rock River Hydrologic Unit

Minor Stream	Resource	Allotment	BLM Reach ID	Vegetative Community Type	Functional Rating and Trend	Miles	Resource Concerns
Red Rock	Junction Creek	Snowline AMP	910	Booth willow / beaked sedge	PFC	0.44	
Red Rock	Junction Creek	Snowline AMP	911	Booth willow / beaked sedge	PFC	0.34	
Red Rock	Junction Creek	Snowline Custodial	941	Baltic rush / clustered field sedge	FAR	0.81	Channel morphology
Red Rock	Junction Creek	Snowline AMP	942	Baltic rush / clustered field sedge	PFC	0.28	
Red Rock	Junction Creek	Snowline AMP	943	Baltic rush / clustered field sedge	PFC	0.50	
Red Rock	Junction Creek	Snowline Custodial	939	Baltic rush / clustered field sedge	PFC	0.72	
Junction Creek	Junction trib	Snowline AMP	945	Beaked sedge	FAR Up	0.85	
Junction Creek	Junction trib	Snowline AMP	955	Booth willow / beaked sedge	PFC	0.16	
Junction Creek	Junction trib	Snowline AMP	956	Quaking aspen / redosier dogwood	PFC	0.20	
Junction Creek	Junction trib	Snowline AMP	957	Quaking aspen / redosier dogwood	PFC	0.19	
Junction Creek	Junction trib	Snowline AMP	958	Quaking aspen / redosier dogwood	PFC	0.10	
Junction Creek	Junction trib	Snowline AMP	959	Quaking aspen / redosier dogwood	PFC	0.13	
Junction Creek	Junction trib	Snowline AMP	960	Quaking aspen / redosier dogwood	PFC	0.36	
Junction Creek	Junction trib	Snowline AMP	904	Shrubby cinquefoil / tufted hairgrass	PFC	1.51	
Junction Creek	Junction trib	Phalarope West	933	Coyote willow	FAR	0.33	-Channel morphology -Historical landfill -Noxious weeds
Junction Creek	Big Beaver Creek	Snowline Custodial	946	Shrubby cinquefoil / tufted hairgrass	FAR	0.54	-Channel morphology

Minor Stream	Resource	Allotment	BLM Reach ID	Vegetative Community Type	Functional Rating and Trend	Miles	Resource Concerns
Junction Creek	Dutch Hollow	Lima Peaks	905	Spruce / redosier dogwood	PFC	0.70	
Junction Creek	Dutch Hollow	Lima Peaks	937	Spruce / redosier dogwood	FAR	0.52	-Channel morphology
Junction Creek	Dutch Hollow	Snowline AMP	906	Spruce / softleaf sedge	FAR	0.58	-Channel morphology -Woody regeneration
Junction Creek	Dutch Hollow	Snowline AMP	907	Spruce / redosier dogwood	PFC	0.11	
Little Sheep Creek	Little Sheep Creek EF	Lima Peaks	914	Quaking aspen / redosier dogwood	PFC	0.84	
Little Sheep Creek	Little Sheep Creek	Little Sheep	915	Geyer willow / beaked sedge	FAR	0.18	-Sedge composition -Channel morphology -Road impacts
Bell Canyon	Bell Canyon	Bell Canyon	900	Geyer willow / beaked sedge	NF	1.15	-Sedge composition -Channel morphology -Noxious weeds -Woody regeneration
Bell Canyon	Bell Canyon	Bell Canyon	931	Geyer willow / beaked sedge	NF	0.43	-Sedge composition -Channel morphology -Noxious weeds -Woody regeneration
Bell Canyon	Limekiln Canyon	Bell Canyon	985	Douglas fir / redosier dogwood	NF	0.60	-Sedge composition -Channel morphology -Invasive weeds -Woody regeneration
Maurer Creek	Maurer trib	Roe Isolated	987	Booth willow / beaked sedge	FAR Down	0.11	-Sedge composition -Channel morphology -Decadent willow -Invasive weeds
Maurer Creek “	Maurer trib	Roe	983	Booth willow. Beaked sedge	PFC	0.18	
Maurer Creek	Red Rock trib	Roe	984	Bebb willow	PFC	0.28	
Sage Creek	Sage Spring	Roe	948	Nebraska sedge	PFC	0.32	
Maurer Creek	Sage Creek	Roe	923	Nebraska sedge	PFC	0.24	
Horse Prairie Creek	Morrison trib	Ellis Peak	718	Geyer willow / beaked sedge	FAR	0.17	-Channel morphology -Woody regeneration
Horse Prairie Creek	Morrison Creek	Ellis Peak	719	Geyer willow / beaked sedge	FAR	0.29	-Channel morphology -Decadent willow
Horse Prairie Creek	Morrison Creek	Ellis Peak	720	Booth willow / beaked sedge	PFC	0.71	

Minor Stream	Resource	Allotment	BLM Reach ID	Vegetative Community Type	Functional Rating and Trend	Miles	Resource Concerns
Horse Prairie Creek	Law Creek	Ellis Peak	721	Booth willow / beaked sedge	FAR	1.21	-Sedge composition -Channel morphology -Woody regeneration
Horse Prairie Creek	Law Creek	Ellis Peak	730	Booth willow / beaked sedge	FAR	0.75	-Sedge composition -Channel morphology -Woody regeneration -Sediment transport
Horse Prairie Creek	Law trib	Ellis Peak	731	Booth willow / beaked sedge	FAR	0.56	-Sedge composition -Channel morphology -Woody regeneration -Sediment transport
Horse Prairie Creek	Law trib	Ellis Peak	756	Quaking aspen / redosier dogwood	FAR	0.25	-Sedge composition -Channel morphology -Woody regeneration -Sediment transport
Horse Prairie Creek	Law trib	Ellis Peak	757	Booth willow / beaked sedge	FAR	0.73	-Sedge composition -Channel morphology -Woody regeneration -Sediment transport
Horse Prairie Creek	Law trib	Ellis Peak	795	Booth willow / beaked sedge	FAR	0.22	-Sedge composition -Channel morphology -Woody regeneration
Horse Prairie Creek	Law trib	Ellis Peak	796	Booth willow / beaked sedge	PFC	0.35	
Horse Prairie Creek	Spring Gulch	Cedar Creek	901	Nebraska sedge	NF	0.39	-Sedge composition -Channel morphology -Sediment transport -Road impacts
Horse Prairie Creek	Spring Gulch	Cedar Creek	925	Geyer willow / beaked sedge	FAR	0.77	-Sedge composition -Channel morphology -Woody regeneration

Table 9. Riparian (Lotic) resources in the Beaverhead Hydrologic Unit

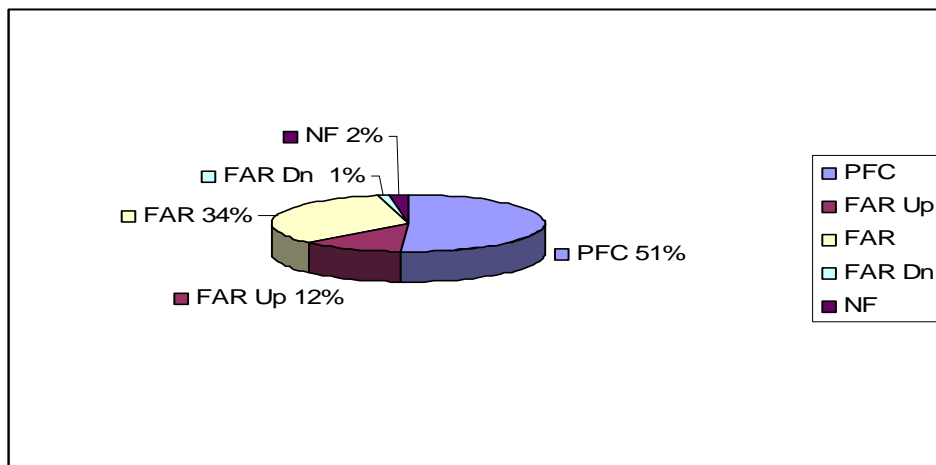
Minor Stream	Resource	Allotment	BLM Reach ID	Vegetative Community Type	Functional Rating	Miles	Resource Concerns
Clark Canyon Creek	Clark Canyon Creek	Clark Canyon Isolated	926	Narrowleaf cottonwood / redosier dogwood	FAR Dn	0.26	-Conifer encroachment -Channel morphology -Woody regeneration
Clark Canyon Creek	Clark Canyon Creek	Clark Canyon	927	Douglas fir / redosier dogwood	FAR Up	0.78	
Clark Canyon Creek	Clark Canyon Creek	Clark Canyon	949	Narrow leaf cottonwood / redosier dogwood	FAR-Up	0.27	
Clark Canyon Creek	Clark Canyon Creek	Clark Canyon	980	Spruce / redosier dogwood	PFC	1.05	

Minor Stream	Resource	Allotment	BLM Reach ID	Vegetative Community Type	Functional Rating	Miles	Resource Concerns
Clark Canyon Cr	Clark Canyon Cr	Clark Canyon	950	Douglas fir / redosier dogwood	PFC	0.87	
Clark Canyon Creek	Clark Canyon Creek EF	Clark Canyon	928	Douglas fir / Rocky Mountain juniper	FAR	0.43	-Channel morphology -Conifer encroachment
Clark Canyon Creek	Clark Canyon Creek EF	Clark Canyon	929	Douglas fir / Rocky Mountain juniper	FAR-Up	0.26	
Clark Canyon Creek	Clark Canyon trib	Clark Canyon	988	Douglas fir / redosier dogwood	FAR-Up	0.52	
Clark Canyon Creek	Clark Canyon trib	Clark Canyon	951	Douglas fir / redosier dogwood	FAR-UP	0.48	
Clark Canyon Creek	Clark Canyon trib	Clark Canyon	986	Douglas fir / redosier dogwood	FAR	0.86	-Woody regeneration -Unstable beaver dams
Clark Canyon Creek	Clark Canyon trib	Clark Canyon	930	Quaking aspen / redosier dogwood	NF	0.61	-Woody regeneration -Channel morphology -Conifer encroachment
Clark Canyon Cr	Poison Gulch	Clark Canyon	952	Douglas fir / redosier dogwood	PFC	0.36	
Clark Canyon Cr	Whiskey Draw	Clark Canyon	953	Douglas fir / redosier dogwood	PFC	1.28	

Table 10. Lentic (Wet Meadows) Wetland Resource Table

Minor Stream	Resource	Allotment	BLM Reach ID	Vegetative Community Type	Functional Rating Acres	Acres	Resource Concerns
Horse Pr. Creek	Law Potholes	Ellis Peak	735	Shrubby cinquefoil / tufted hairgrass	FAR	8.53	-Excessive hummocks
Junction Creek	Junction trib	Snowline AMP	909	Nebraska sedge	PFC	8.91	

Chart 1. Lotic Wetland Resource Condition Amounts



General resource concerns observed by the IDT on most allotments that were rated FAR down, FAR static or NF, included alteration of stream morphology (channel shape and gradient), sedimentation and deposition. Vegetation related concerns included lack of regeneration of woody species i.e. willow, aspen and cottonwood, composition, cover, structure, and lack of vigor on streamside vegetation. Although most of the stream reaches with riparian concerns were due to livestock related impacts, certain reaches that had ratings of FAR or NF were not related to grazing management. These reaches and/or the allotments they are found in are listed below with a brief explanation.

Junction Creek, reach 933, located south east of Lima, Montana in the Phalarope West allotment was rated FAR by the IDT. The poor riparian conditions are not attributable to grazing or other authorized activities. Rather, conditions observed were mostly caused by the increase in impervious surface and runoff associated with Interstate 15. The interstate and associated stream runoff and morphology changes, was also the main reason for riparian concerns on reach 941 in Snowline allotment. The IDT also took note of an abandoned dump on reach 933. The accelerated channel erosion associated with increased runoff is exposing materials within the dump. A high occurrence of spotted knapweed was also found along this reach.

Clark Canyon, found within Clark Canyon Allotment, is a unique feature in the landscape and it exhibits geology and geomorphology unlike other drainages in the RRLW. There is considerable mass wasting, possibly associated with extensive volcanic ash deposits. Conifer encroachment into riparian areas (reach 928), lack of woody regeneration (reach 930) and an absence of beaver activity (reach 986) are the primary riparian concerns on the allotment.

Clark Canyon Isolated allotment, including only 140-acres of 140 BLM administered lands, surrounds a short stretch of Clark Canyon Creek and is being encroached by conifers. Lack of woody regeneration, primarily aspen along the stream, is the main reason for the FAR riparian rating on the allotment.

Special Status Plants

The majority of rare plants found in riparian areas and wetlands have an affinity for meadow habitats. Many wet meadows in the RRLW are drying out and are being invaded by upland plant species such as pussy-toes and common yarrow. Upstream diversions, long term drought, localized livestock trampling and reduced beaver populations likely contribute to this potential loss of wetland habitat.

Kentucky bluegrass and common dandelion are present in most wet meadow habitat and along many stream reaches. Kentucky bluegrass may compete with Idaho sedge and Rocky Mountain dandelion may be vulnerable to competition from the introduced dandelion especially where there is concentrated grazing and trampling by livestock.

Canada thistle and houndstongue are scattered throughout the RRLW and were observed in many riparian and wetland habitats, especially along intermittent stream reaches. This noxious weed may also compete with rare plants dependent on streamside and meadow habitats.

Recommendations for Riparian Health

1. Adjust length of time or season of livestock grazing on the Clark Canyon allotment in pastures containing stream reaches 930, 928, and 986.
2. Construct a riparian enclosure fence around Little Sheep Creek reach 915 and the associated spring in the Little Sheep allotment.
3. Consider periodic year-long rest treatments to reduce grazing pressure on Law Creek for the east half of the Ellis Peak allotment.
4. Consider fencing options to isolate the “canyons” portion of the Bell Canyon allotment and then consider periodic year-long rest treatments for upper Bell & Limekiln Canyons.
5. Consider constructing an enclosure around lower Cedar Creek (901) on the Cedar Creek allotment.
6. Consider combining the Cedar Creek, Williams and Shoshone Cove allotments and treating each allotment as a pasture in a three treatment rest-rotation grazing system.
7. Consider treatments to mitigate conifer encroachment into riparian areas in the Clark Canyon Isolated and Clark Canyon allotments.
8. Consider management options that include a livestock enclosure on reach 987 in Roe Isolated allotment.
9. Consider protective fencing to reduce livestock trampling and grazing pressure and on specific wet meadows.
10. Where accessible and cost effective, treat Canada thistle and houndstongue to prevent further spread. When a biological control for houndstongue is approved for use by the Animal and Plant Health Inspection Service (APHIS), release these insects into the larger infestations, generally along riparian areas, in the RRLW to help control the spread of houndstongue.
11. Continue to work with the Dyer’s Woad Task Force and Beaverhead County to eradicate the Dyer’s woad infestation south of Lima.

Water Quality

Western Montana Standard #3: *“Water quality meets State standards”*

Procedure to determine conformance with Standard:

Montana DEQ is responsible for making calls on water quality and is in the process of assessing the condition of streams, establishing reference sites and developing water quality restoration plans. The Dillon Field Office shares assessment findings with DEQ to support their efforts.

The foundation for Montana Water Quality Law is the Federal Clean Water Act. The goal of the Clean Water Act is to “restore and maintain the chemical, physical and biological integrity of the Nations waters.” To meet that goal, Waters of Montana are required to support beneficial uses. Several of the creeks and rivers in the RRLW assessment area are not supporting their beneficial uses because of non-point source pollution. According to Montana’s 2006 integrated 303d/305b Water Quality Report, non-point source pollution accounts for 90% of the stream and 80% of the lake impairments statewide. The leading cause of impairment to lakes in Montana is atmospheric deposition. For Montana’s streams, pollutants resulting from land-uses are responsible for most non-point source pollution.

Affected Environment

Montana DEQ has no reference sites within the RRLW assessment area. However, there are two such sites located east of the assessment area in the Blacktail Valley as described in the 2006 Blacktail Watershed Assessment.

Findings and Analysis

The Beaverhead River, Clark Canyon Creek, Horse Prairie Creek, Medicine Lodge Creek, and Red Rock River are the receiving waters of streams in the RRLW assessment area and are listed as water quality impaired streams. Montana DEQ has not typically assessed headwater streams, as headwater streams were not generally nominated for 303d listing. Following is a table of Beneficial Uses and Probable Sources of Impairment for 303d listed streams within the assessment area that appear in the 2006 Report:

Table 11. Montana DEQ 303-d Listed Streams in the RRLW Assessment Area

Name	Beneficial Uses	Probable Sources of Impairment	Probable Causes of Impairment
BEAVERHEAD RIVER, Clark Canyon Dam to Grasshopper Creek	Agricultural, Aquatic Life, Cold Water Fishery, drinking Water, Industrial, Primary Contact Recreation	Agriculture, Dam or Impoundment, Irrigated Crop Production, Impacts from Abandoned Mine Lands,	alteration in streamside or littoral vegetative covers, low flow alterations, lead
CLARK CANYON CREEK	Agricultural, Aquatic Life, Cold Water Fishery, Drinking Water, Industrial, Primary Contact Recreation	Grazing in Riparian or Shoreline Zones	alteration in streamside or littoral vegetative covers, phosphorous (total), sedimentation, siltation
HORSE PRAIRIE CREEK	Agricultural, Aquatic Life, Cold Water Fishery, Drinking Water, Industrial, Primary Contact Recreation	Irrigated Crop Production, Impacts from Abandoned Mine Lands,	low flow alterations, arsenic, cadmium, copper, lead, mercury, zinc.
MEDICINE LODGE CREEK	Agricultural, Aquatic Life, Cold Water Fishery, Drinking Water, Industrial, Primary Contact Recreation	Grazing in Riparian or Shoreline Zones, Irrigated Crop Production	alteration in streamside or littoral vegetative cover, low flow alterations, sedimentation/siltation, phosphorous (total), temperature

RED ROCK RIVER, Lima dam to Clark Canyon Reservoir	Agriculture, Aquatic Life, Cold Water Fishery, Drinking Water, Industrial, Primary Contact Recreation	Grazing in Riparian or Shoreline Zones, Loss of Riparian Habitat, Impacts from Abandoned Mine Lands, Impacts from Hydrostructure Flow Regulation and/or modification, Irrigated Crop Production	alteration in streamside or littoral vegetative cover, low flow alterations, physical substrate habitat alterations, sedimentation/siltation, temperature, lead, zinc
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The BLM understands that non-point source pollution needs to be addressed for waters of the State regardless of whether they are or are not meeting water quality standards and that non-degradation rules apply to waters that are meeting state water quality standards.

The surface and bedrock geology in the RRLW are varied and complex. This is especially evident in the Clark Canyon drainage. Poorly sorted unconsolidated quartz gravel conglomerates along with sand and volcanic ash are found within this landslide formed basin. Slumping and mass wasting result in soil erosion and sediment loading. Historic rain on snow events have contributed to accelerated erosion and have aggravated channel aggradation. The current hydrologic regime has not been sufficient to transport these historic loads.

While the BLM IDT does not make beneficial use determinations, the upland and riparian aspects of the watershed assessment do consider land health factors of significance to water quality. Upland evaluations consider soil condition and erosion. Riparian evaluations consider sources of sediment and stream condition. Specific findings and recommendations are described in the upland and riparian sections

Recommendations for Water Quality:

1. Continue working with Montana DEQ and local Watershed Committees by sharing information and technical expertise for the development and implementation of watershed water quality restoration plans.
2. Continue implementing Best Management Practices to address non-point source pollution.

Air Quality

Western Montana Standard #4: *“Air quality meets State standards”*

Procedure to determine conformance with Standard:

The Clean Air Act of 1990 as amended (42 U.S.C. 7401 et seq) requires the BLM to protect air quality, maintain Federal and State designated air quality standards, and abide by the requirements of State Implementation Plans.

The Environmental Protection Agency has delegated the authority to implement the provisions of the Clean Air Act to the State of Montana. Determination of compliance with air quality standards is the responsibility of the State of Montana. All of southwest Montana is in attainment, meaning that the air resource meets or exceeds all National Ambient Air Quality Standards.

Affected Environment

The RRLW is located within the Montana/Idaho Airshed Management Area. The closest population center in the vicinity is Dillon, Montana located to the north of the RRLW. Dillon's population is 4,035, with a population of 8,950 for all of Beaverhead County, most of the latter living within a few miles of Dillon (Cantrell, 2006).

The 1977 Amendments to the Clean Air Act resulted in the development of Air Quality Classes under the provisions of Section 160, Prevention of Significant Deterioration. The RRLW is located within a Class II airshed.

The 1998 Interim Air Quality Policy for Wildland and Prescribed Fires requires states to develop smoke management plans. The Montana/Idaho Airshed Group developed the Montana/Idaho Smoke Management Program. Prescribed burning is done in accordance with the Montana/Dakotas Fire Management Plan and is coordinated with MT DEQ and the Montana/Idaho Airshed Group. During prescribed fire season, the Smoke Monitoring Unit supports the Montana/Idaho Airshed Group to prevent or reduce the impact of smoke on area communities—especially when that smoke could contribute to a violation of national air quality standards. During the summer wildfire season, the Smoke Monitoring Unit assists state and local governments in monitoring smoke levels and providing information about smoke to the public, firefighters, and land managers.

Findings and Analysis

Generally Air Quality in Southwest Montana is excellent. The closest Ambient Air Quality monitoring site to the assessment area is located south of the area administered by the Dillon Field Office in Idaho Falls. Butte is the closest Montana State Particulate Matter (PM) 10 Non-Attainment Area. A PM 2.5 emission is a pollutant level of concern and the State of Montana is charged with developing a strategy to address PM 2.5 emissions. Most PM 2.5 emissions are generated by fire.

Predominant winds in RRLW are out of the northwest, west and southwest. For the major part of the year, the Air Quality Standard is met throughout Southwest Montana. Air quality issues in the planning area center mainly around smoke. Smoke contributors include wildfire, prescribed fires, private debris burning, agricultural burning, slash burning, and wood burning stoves and fireplaces. Wildfire can produce short-term adverse effects on air quality. Air quality and visibility can deteriorate due to temporary air stagnation during wildfire events, which are most common during the months of July, August, and September. Concerns regarding human health revolve around smoke from wildland and prescribed fire. Southwest Montana experienced

several weeks of poor air quality during the months of July, August and September, 2007 due to fires in Idaho and on the Beaverhead National Forest upwind of the assessment area.

Recommendation for Air Quality:

1. Continue to follow burn plans and coordinate with the Smoke Monitoring Unit of the Montana Idaho State Airshed Group.

Biodiversity

Western Montana Standard #5: “Provide habitat as necessary, to maintain a viable and diverse population of native plant and animal species, including special status species”

Procedure to determine conformance with standard:

This Standard is an overall assessment of biodiversity and wildlife habitat. The present state of each allotment and habitat type was compared to the natural and historic condition. The indicators described under the definition of Standard #5, as well as condition/function of the other standards, specifically uplands and riparian, were considered to determine whether or not the Biodiversity Standard was met.

The IDT considered the range of natural variation within this eco-region as well as the species composition, condition of available habitat, and forest health to determine the condition/function of biodiversity. The wildlife habitat niches expected are: grasslands (short and mid grasses), bare ground, small streams, riparian/wetlands, sagebrush steppe, conifer forests, aspen stands, and various mixes of these components. Providing habitat for special status plant and animal species is critical to meeting the biodiversity standard.

Affected Environment

The RRLW includes several diverse habitat mosaics. The watershed is primarily made up of relatively contiguous area of sagebrush and/or grassland habitat. Conifer habitat makes up about 30% of the assessment area. The largest component of conifer habitat is found on the western side of the Red Rock River within the Tendoy Mountains. Smaller areas of conifer and aspen habitat can be found on the east side in Maurer Creek, in the headwaters of Clark Canyon Creek, and in the southeast portion of the watershed in the Dutch Hollow area. The assessment area provides seasonal and yearlong habitat for a wide variety of sagebrush dependent species and other wildlife uses that are enhanced by the interspersed and diversity of sagebrush species, grasslands, riparian habitat, rocky outcrops and forested areas.

Portions of the assessment area see considerable seasonal wildlife movements. Fences that are over 40 inches off the ground or are less than 16 inches off the ground are found on some allotments in the analysis area and inhibit wildlife passage, particularly for young animals.

Sagebrush Habitats and Sagebrush Dependent Species

The watershed provides a diverse number of sagebrush communities with most of the sagebrush species and habitat types found in southwestern Montana present in the assessment area. Several patches of Basin big sagebrush are present in drainage bottoms such as Bell and Limekiln

Canyons. This sagebrush community provides important structure and cover for wildlife that require tall dense sagebrush such as, pygmy rabbit, sage thrasher, sage sparrow, loggerhead shrike and other sagebrush dependent species.

Sage grouse populations and sagebrush habitats have declined throughout the west due to suitable land losses from habitat conversion for agricultural needs, urbanization, livestock grazing, and wildland fire. Previous petitions for listing the sage grouse under the Endangered Species Act (ESA) emphasize the need for region-wide assessments addressing habitat conditions and population stability. This emphasizes the importance of maintaining the integrity of mid- to late-seral sagebrush habitats on public lands, not only for sage grouse but for all sagebrush obligate species. Important sage grouse seasonal habitat is centered on breeding and winter complexes. Nesting usually occurs within two miles of the lek, where suitable habitat is available. Brood rearing habitats require a mix of forbs and insects for a high protein diet, usually in association with riparian habitats. Winter diets consist of almost 100% sagebrush. The *Management Plan and Conservation Strategies for Sage Grouse in Montana* completed by the Montana Sage Grouse Working Group will be used as a guideline for future management of sagebrush habitat.

Sage grouse are found throughout the analysis area year-long with most public land habitat located in the Snowline and Henneberry Ridge areas. Leks are located on the Cedar Creek allotment near Henneberry Ridge and on the Snowline allotment on lower Shineberger Creek. These leks generally support 10-25 males during breeding season. Birds using the Cedar Creek lek are probably non-migratory, although seasonal movements into seasonal habitats up to five to ten miles away are possible. Flocks of several hundred birds have been observed on the Snowline allotment during winter and early spring months. Radio telemetry data reveals that female and male grouse from Sage Creek and the Lower Centennial Valley move through Junction Creek and Shineberger Creek areas on the way to southeast Idaho during the winter, and return through the area in the spring. The Snowline allotment east of I-15 supports yearlong sage grouse use as well as this migratory seasonal use.

Pygmy rabbit habitat is present from the Snowline allotment northward through the Rocky Hills allotment, although occupied habitat is discontinuous and fragmented. Habitat along the east face of the Tendoy Mountains is in short stringers of sagebrush in lower elevation drainages separated by extensive open grassland areas. Rabbits using these habitats are more vulnerable when losses of sagebrush cover occur. More extensive sagebrush habitat in Snowline and Rocky Hills supports more secure pygmy rabbit use.

The area from MacKenzie Canyon to Clark Canyon Reservoir lies within the Lima/Sweetwater Breaks and is a key raptor management area (USDI, 2004). This area was designated through Fish and Wildlife 2000 and the Dillon RMP because of the concentrated nesting density of ferruginous hawks, prairie falcon, golden eagles and other raptors. During the period of 1985 through 1995, this area supported one of the three densest breeding populations of ferruginous hawks known in the world. Key area habitat management objectives for this region include maintaining the existing interspersed sagebrush and grassland habitat types and physical features that support and enhance ferruginous hawk nesting.

Comprehensive inventories for other sagebrush dependent birds, small mammals, and reptiles have not been completed.

Generalist or Widespread Species

The RRLW provides habitat for migratory and resident elk. Elk winter habitat extends at lower elevations from Lima Peaks along White Pine Ridge and the east face of the Tendoy Mountains to Limekiln Canyon, throughout the Rocky Hills, and the area north and south of Clark Canyon drainage. Winter concentrations of up to 400 elk occur on public lands between Dutch Hollow, Little Sheep Creek, and Garr Canyon, and around 200 elk occur in the Bell/Limekiln Canyon area. Elk migrating out of the East Pioneer Mountains and the Big Hole Divide area use winter habitat in Rocky Hills along with several hundred resident elk that are in the area yearlong. Clark Canyon winter habitat generally supports 100 to 200 elk. Hunting pressure, fall weather and winter snow depths throughout the area influence actual numbers and timing of winter habitat use. Most elk calving habitat in Lima Peaks and the Tendoy is on adjoining higher elevation habitats on Forest Service lands but some calving use occurs in Dutch Hollow, East Fork Little Sheep Creek, and Bell/Limekiln Canyon. Calving areas for resident Rocky Hills elk has not been identified. Clark Canyon provides outstanding calving and summer habitat for up to 200 elk. Net wire fences and dilapidated barbed wire fences represent an entanglement hazard, especially for elk and moose calves.

Antelope are found throughout the RRLW. The highest concentrations are generally found in the area around Snowline and the Henneberry Ridge. Smaller numbers can be found scattered in sagebrush habitats throughout the assessment area. Small groups of wintering antelope are found on the east side of Interstate 15 around Snowline as well as in agricultural fields within the area. This is also a major migration corridor for antelope moving out of the Centennial Valley to winter habitat further north.

Mule deer are year round residents of the RRLW. Mule deer typically spend the summer and fall in the higher elevations, with most migrating to lower elevation winter habitat. Major winter use occurs in Little Sheep Creek and in the Chute and Garr Canyon areas. As with elk, substantial numbers of mule deer migrate into the Rocky Hills area from the East Pioneer Mountains and Big Hole Divide area, although some deer are year-long residents.

Moose can be found throughout the area year-long, making use of riparian, mountain mahogany and Douglas-fir habitats. Moose numbers have increased throughout the RRLW in recent years. Black bear utilize riparian and forested habitat throughout the RRLW. They occasionally occupy open sage and other areas supporting spring elk calving use. Mountain lion are occasional residents but levels of use are undocumented.

Bighorn sheep were re-introduced into the Tendoy Mountains between 1985 and 1996. They have expanded southward into public land habitat from Big Sheep Creek south to Norris Canyon and Straight Creek, and northward as far as Rock Creek/upper Bell Canyon. As many as 45 ewes, lambs, and rams have been documented in the Straight Creek area. Suitable habitat is found in the upper Bell and Limekiln Canyon while occupied bighorn habitat is located on adjoining Forest Service lands in Rock Creek. Population numbers and stability has been influenced by two die-offs, but primary habitat in these areas continues to be occupied.

Conifer Forest Habitat and Associated Species

Forested habitats comprise approximately 11% of the watershed. The close association of much of this forested habitat with adjoining sagebrush and riparian habitats support a broad array of wildlife species. Forested habitat in the watershed provides important security and thermal cover for deer and elk. Dry Douglas-fir stands have expanded in recent decades, enlarging existing stands and pioneering into adjacent habitat. The resulting habitat conversion to Douglas-fir or Rocky Mountain juniper has reduced forage availability in riparian habitats more so than shrub-steppe habitat. The timber stands provide habitat for a variety of birds and mammals such as hairy woodpecker, blue and ruffed grouse, northern goshawk, red-naped sapsucker, and snowshoe hare.

Special Status Species and Biological Corridors

See appendix for a full list of all special status wildlife species in the RRLW.

Table 12. Threatened Species Occurring Within the RRLW

List of all Special Status Species that are known to occur within the watershed.	Current Management Status of the Species.	Occurrence: Resident * (R) Transient *(T)	Preferred habitat
Gray Wolf (<i>Canis lupus</i>)	Threatened, Experimental Proposed for delisting	T	All
Grizzly Bear (<i>Ursus arctos horribilus</i>)	Threatened, experimental	T	Forest

The RRLW lies in the biological corridor between the central Idaho wilderness areas and the Greater Yellowstone Ecosystem. The relative lack of development and widespread human disturbance between Spencer, Idaho and Clark Canyon Reservoir enhances the likelihood of wolves, grizzly bears, wolverine, lynx and other large predators. These predators are occasionally found occupying portions of the watershed in Snowline, White Pine Ridge, and the southern Tendoy Mountains. Potential wildlife movement may be inherently limited by relatively little forested habitat interspersed with expansive open sagebrush habitat and roads. Traffic in the I-15 corridor further inhibits movement.

With the reintroduction of wolves into central Idaho and Yellowstone, and the historical occurrence of resident wolves, there are more wolves present in southwest Montana. No stable packs are currently occupying any habitat within the watershed. However, wolves have denned in the Timber Butte area west of Dell and are regularly reported adjacent to the Continental Divide from the western Centennial Valley through Big Sheep Basin, and northward into the Grasshopper Valley.

Widespread occurrences of gray wolves outside of primary recovery zones have continued to increase. Under the reintroduction rules, wolves that are within the re-introduction area but are not within a national park or national wildlife refuge are treated as a “proposed threatened” species, rather than endangered, for Section 7 consultation purposes under the ESA. Wolves

occurring within the RRLW are outside of the primary recovery zone, and are considered non-essential experimental populations. As wolf – livestock conflicts increase; they will generally result in removal or relocation of offending wolves, which may preclude the potential establishment of stable packs in the RRLW. A Montana state management plan is being developed to direct wolf management after delisting.

Grizzly bear use outside the Yellowstone recovery area is expanding and sightings have been reported nearby in the Centennial Mountains and Lima Peaks.

Relatively small patches of potential lynx habitat are present in the Tendoy Mountains and Lima Peaks. This determination is based on forest habitat types. These small stands meet vegetation criteria as potential lynx habitat but are most likely too small to support anything other than temporary transient use. The likelihood of lynx use occurring in these areas is low due to the isolation from other potential habitat. No lynx inventory efforts have been conducted on public lands in the watershed.

Suitable habitat for wolverine exists in Lima Peaks and portions of the Tendoy Mountains but no intensive inventory for use has been completed. Given the wide-ranging movements of wolverine, it is possible that occasional, undocumented wolverine use is occurring through this area. The nearest known occupied wolverine habitat is in the southwestern Snowcrest Mountains and southern Lemhi Mountains.

Two active bald eagle nesting territories occur along the Red Rock River corridor adjacent to the assessment area. Winter concentrations of bald eagles can be found where prey is available, such as Clark Canyon Reservoir and open sections of the Beaverhead and Red Rock Rivers. Cooperative interagency monitoring is occurring through the Montana Bald Eagle Management Plan. Recovery efforts for bald eagle and restrictions around nests have not inhibited current land use authorizations. Bald eagles have recently been de-listed from the ESA.

Riparian, Aquatic and Wetland Habitat and Associated Species

Riparian habitat is widely scattered within this dry watershed which increases the importance of this habitat for dependent wildlife species. Larger perennial streams are rare, with most riparian habitats associated with small seeps which originate as springs, isolated springs with no downstream connections to other water sources, or intermittent drainages and wet meadows. The limited availability of this habitat, combined with reduced spring/stream flows from drought, concentrates use from livestock and wildlife, as these sites usually provide the only green succulent vegetation available later in the summer and fall.

Riparian habitat and stream conditions are discussed above under the Riparian Standard. Riparian and wetland habitats comprise approximately 2% of the RRLW. These habitats are generally dominated by willow or aspen communities along foothills streams, and often represent stringers of habitat extending from forested areas into sagebrush/ grassland habitat into lower elevation private lands in the major stream bottoms. These communities around springs and seeps in sagebrush habitats represent important islands of habitat diversity as well as crucial water sources for all wildlife.

Riparian habitats receive a disproportionate amount of wildlife use with approximately 75% of all wildlife species in this area utilizing riparian habitat for at least some portion of their annual life cycle. These riparian areas provide essential habitat for moose, elk, beaver, sage grouse brood rearing and neo-tropical migrant songbird nesting. Spring developments can provide a clean water source for wildlife, but can also prove to be fatal when escape ramps are not installed in them.

Beaver are present in low numbers in suitable habitat in the headwater area of Clark Canyon Creek, West Fork of Sheep Creek, Red Rock River, and several drainages in the Snowline area. Old activity was noted in Dutch Hollow as was evident by relic dams within the drainages. With the exception of the locations noted above, habitat suitable for beaver colonies is lacking. The beaver pond complexes are essential to sustain amphibian populations within the watershed.

Amphibians and Reptiles

The Clark Canyon Creek drainage provides some of the most unique wetland/riparian habitat in the DFO. The interspersed beaver ponds, natural ponds, springs and streams in a conifer/aspen forest provide habitat for a variety of aquatic species. A cursory inventory of amphibians by Montana Natural Heritage Program found numerous sites with spotted frog and salamanders (Maxwell 2004). Maintaining the integrity of this habitat is crucial to the continued survival of this unique resource. Reptiles in the assessment area are restricted to three documented species of snakes. The most common is the terrestrial garter snake, followed by the common garter snake and the western rattlesnake. The garter snakes are somewhat generalist in habitat preference but are more common near riparian areas. The western rattlesnake is typically found in the drier sites associated with grass, sage and rocky areas.

Two reptile species which have not been officially documented in the assessment area, but are likely present, are the gopher snake, commonly called the bull snake, and the rubber boa. The gopher snake favors habitat that is similar to the western rattle snake while the rubber boa prefers timbered mountainous terrain but can be found on rocky outcrops close to their preferred habitat. A thorough amphibian and reptile inventory has not been completed for the assessment area.

Fish Streams

There are five streams in the assessment area that support a fishery. Maurer Creek, located on the east side of the Red Rock River, supports a population of cutthroat trout of unknown genetic origin. Prior to 2007, Maurer Creek was not known to support a cold water fish population. Fish surveys conducted on this stream in 2007 indicate a healthy population of cutthroat trout in the drainage. Genetic samples were collected and submitted for analysis to determine species and genetic status of this undocumented population of cutthroat trout. Results should be available by spring 2008. The lower reaches of Clark Canyon Creek support populations of eastern brook trout and genetically untested cutthroat trout. Little Sheep Creek supports a population of eastern brook trout and hybridized cutthroat trout. The East Fork of Little Sheep Creek supports populations of eastern brook trout and several cutthroat trout of unknown genetic origin were observed while conducting a stream assessment in the summer of 2007. Morrison Creek, located on the west side of the Medicine Loge Creek drainage supports a small population of eastern brook trout.

Findings and Analysis

Browsing by livestock and wildlife and lack of fire has led to a reduction in aspen regeneration and a reduction in willow cover in some drainages. Increased cover of these woody species could lead to more suitable habitat for beaver, which may improve habitat conditions for other riparian dependent species such as amphibians.

The Snowline basin and Henneberry Ridge remain the centers for activity for sage grouse in the RRLW. Sage grouse populations in the area have fluctuated in the past, but recent lek counts reflect that the population is stable.

Many existing fences have been modified or constructed to improve passage by large ungulates in the past. However, wildlife movements are being inhibited in some areas of the watershed by livestock fencing that is not meeting BLM specifications. Dysfunctional fencing can also become a wildlife entanglement hazard.

Big game population trends have been stable to increasing for the past several years. Post harvest production surveys show good recruitment for moose, mule deer, elk and most antelope populations (pers. com. MFWP). The exception is antelope populations in the area of Big Sheep Creek south to Snowline where the population trend and recruitment has been down recently. This decline is most likely related to harsh winter conditions rather than habitat (pers.com. MFWP). Winter big game habitat monitoring on public lands indicate habitat is in good condition which is consistent with the upland standards being met on allotments in the RRLW.

Recommendations

Recommendations to improve uplands and riparian habitat will also improve biodiversity, and were covered under their respective sections above.

1. Adjust the timing, intensity, frequency, duration and/or location of domestic livestock grazing to:

- Reduce streambank trampling, reduce willow/aspen browsing and increase the vegetative cover of deep rooted plants to enhance habitat stability and structural diversity on streams where resource concerns were identified. See riparian impacts for a list of affected areas
- Manage livestock to reduce bank trampling and trailing impacts on Maurer Creek to improve the lower portions of stream reach 987.
- Reduce livestock impacts to the springs in the Bell Canyon allotment.

2. Modify wildlife barrier fences on allotments where present.

- Modify/reconstruct BLM fences to meet wildlife-friendly specifications in accordance with BLM Manual/Handbook H-1741-1.
- Ensure that any new BLM boundary fences are built to BLM specifications.
- Remove all dysfunctional or unnecessary BLM fences.
- Negotiate cooperative maintenance agreements on BLM - private boundary fences to allow modification of fences that meet BLM specifications.

3. Continue sagebrush habitat inventory to identify important sage grouse seasonal habitats with emphasis on locating active leks and brood-rearing habitats. Follow recommendations in the *Management Plan and Conservation Strategies for Sage Grouse in Montana* to improve habitat conditions for all sagebrush obligate species.
4. Ensure that all stock tanks in the watershed are outfitted with an operational wildlife escape ramp.
5. Consider feasibility of installing wildlife guzzler in the Phalarope West and Snowline allotments.
6. Conduct fish surveys on Clark Canyon Creek and East Fork of Little Sheep Creek to verify westslope cutthroat trout are present. Genetic collections of these untested cutthroat trout populations are planned for 2008.

Forest Health and Fuels Management

Affected Environment

Forest and Woodland Condition

The Dillon RMP defines forest land as land that is now, or has the potential of being, at least 10 percent stocked by forest trees (based on crown closures) or 16.7 percent stocked (based on tree stocking). The Dillon RMP defines woodlands as forest communities occupied primarily by noncommercial species such as juniper, mountain mahogany, or quaking aspen groves; all western juniper forest lands are classified as woodlands, since juniper is classified as a noncommercial species. Woodland tree and shrub canopy cover varies, but generally individual plant crowns do not overlap. Forest and woodland habitats comprise approximately 11% of all ownerships, and approximately 10% of BLM-administered lands within the RRLW.

In broad terms, a healthy forest is one that maintains desirable ecosystem functions and processes. Aspects of forest health include biological diversity; soil, air, and water productivity; ability to withstand natural disturbances; and the capacity of the forest to provide a sustaining flow of goods and services for people.

The majority of the forested land administered by the BLM in the RRLW is in the Clark Canyon area and the northern Tendency Mountains. Effective precipitation and aspect influences the establishment of forest and woodlands. Disturbance, such as reoccurring fire, regulates the extent of forests and woodlands.

Low elevation woodlands contain Douglas-fir, limber pine, mountain mahogany, and scattered Rocky Mountain juniper. Limber pine is generally found on steep, dry, and/or rocky slopes at lower to mid-elevations. Mountain pine beetle and/or white pine blister rust is causing mortality of limber pine, and in some areas extensive limber pine mortality may result in forest type conversion to stands dominated by Douglas-fir (particularly in the Little Sheep Allotment). Conifer expansion into openings and sagebrush/grassland is most evident at the low to mid-

elevations of the assessment area, particularly in mountain big sagebrush/Idaho fescue shrublands. As a result, some areas of sagebrush habitat have converted to conifer-dominated habitats, and scattered mountain meadows have filled in with conifers. This conversion is particularly apparent on the mid-elevation slopes near Bell and Limekiln Canyons.

Aspen communities are limited, and many existing clones are rapidly declining and being replaced by conifers. Aspen skeletons are commonly found in stands now dominated by Douglas-fir, particularly in the Clark Canyon Allotment.

Douglas-fir forests occupy cooler exposures on moderate to steep slopes from 6,200 to 8,100 feet within the RRLW. Forest canopy cover is generally greater than 70%, dominated by Douglas-fir with limber pine and Rocky Mountain juniper usually providing less than 20% cover. Most of the Douglas-fir stands in the RRLW have had some logging activity in the past. Skeletons of mountain big sagebrush are often present in younger stands indicating that these sites may pass through a seral stage dominated by this and other rangeland species.

As a result of fire exclusion, conifer densities have increased within forested stands. Old, remnant Douglas-fir with evidence of historic fire (fire scars) are present and surrounded by younger Douglas-fir with little evidence of fire activity. Fire scarred Douglas-fir trees in the Lima Peaks area indicate at least four wildfires from 1726 to 1890, with no large scale fires after 1890 (Gruell, 1983).

Spruce budworm activity is increasing and causing defoliation of Douglas-fir in the RRLW. While spruce budworm does not usually cause direct tree mortality, it will predispose trees to attacks by other insects or diseases. Douglas-fir bark beetle is present in the watershed, and is causing mortality in scattered, mature Douglas-fir. In some areas, this component of mature Douglas-fir is being lost as a result of Douglas-fir beetle activity.

At higher elevations, forested habitats contain mixed conifer communities of Douglas-fir, spruce, lodgepole pine, and subalpine fir. The whitebark pine/Idaho fescue woodland is a minor type found at the highest forested elevations, generally about 8,600 feet on wind-swept ridgelines and west and southwest-facing slopes of the Tendoy Range. Whitebark pine habitats are at risk due to white pine blister rust and/or mountain pine beetle.



Photo 2- Showing Douglas-fir encroachment into mountain big sagebrush / Idaho fescue shrubland, defoliation by spruce budworm, and evidence of historic fire (background hillside) in the Bell Canyon Allotment, August 2007

Findings and Analysis

Historical Fire Regimes

Evidence of historically, recurring fire is found throughout the analysis area in forests and woodlands. Fire exclusion, caused primarily by fire suppression and livestock management on rangelands over the last century, has changed the structure, density, and species composition within forest and grassland communities. Conifers are expanding into riparian and grassland/sagebrush communities, conifer densities have increased within stands, and fuels have increased within areas historically maintained by moderate to high fire frequencies. High intensity fires are now more likely to occur in areas that historically experienced low intensity, frequent to moderately frequent fires. High intensity fire presents risks to wildlife security cover, watershed stability, sensitive fish and wildlife habitat, human life and property.

In fire adapted ecosystems, recurrent fire is the dominant disturbance that affects vegetation patterns. One method to describe this disturbance is by using historical fire regimes (Table 12). The fire regime concept is used to characterize the personality of a fire in a given vegetation type, how often it visits the landscape, the type of pattern created, and the ecological effects. The historical fire regimes for the watershed are arranged based on fire severity and fire frequency.

Table 13. Historical Fire Regimes for BLM-administered lands

Historical Fire Regime	Severity (% Overstory Replacement)	Fire Interval (Years)	BLM Acres	% of BLM Forested	Representative Ecosystem
NL -- non-lethal	low - <20%	10 to 25	965	13%	Dry pine, conifer encroachment and juniper forests
MS1 -- mixed severity, short interval	low - 20-30%	20 to 40	2,452	42%	Lower elevation conifer forests
MS2 -- mixed severity,	mod - 30-80%	40 to 120	560	10%	Shrublands, mixed conifer forests

Historical Fire Regime	Severity (% Overstory Replacement)	Fire Interval (Years)	BLM Acres	% of BLM Forested	Representative Ecosystem
long interval					
MS3 – mixed severity, variable interval	variable - 10-90%	45 to 275	46	1%	Higher elevation conifer forests
SR1 -- stand replacement, short interval	high - >80%	95 to 180	1,720	30%	Certain lodgepole pine, dry Douglas-fir forests
SR2 -- stand replacement, long interval	high - >80%	200 to 325	38	1%	High elevation whitebark pine, spruce-fir
SR3 -- stand replacement, nonforest	high - >80%	<35	55,743		Grasslands, many shrub communities

* The acreage calculation for each historical fire regime is based on the hydrologic unit scale. Acreage discrepancies occur through calculations made in GIS.

The majority of forested habitats on BLM administered lands within the RRLW (72%) is in short interval fire regimes and has missed 2 or more fire intervals.

Current Condition Classes

Fire Regime Condition Class (FRCC) is a classification of the amount of departure from the natural fire regime (Hann and Bunnell 2001). Coarse-scale FRCC classes have been defined and mapped by Hardy et al. (2001) and Schmidt et al. (2002), based on a relative measure describing the degree of departure from the historical natural fire regime. This departure is from changes to one (or more) of the following ecological components: vegetation characteristics (species composition, structural stages, stand age, canopy closure, and mosaic pattern); fuel composition; fire frequency, severity, and pattern; and other associated disturbances (e.g. insect and disease mortality, grazing, and drought).

Three Condition Classes were developed to categorize the current condition with respect to each of the historic Fire Regime Groups. The three classes are based on low (Condition Class 1), moderate (Condition Class 2), and high (Condition Class 3) departure from the natural (historical) regime (Hann and Bunnell 2001, Hardy et al. 2001, Schmidt et al. 2002). Criteria used to determine current condition include the number of missed fire return intervals with respect to the historic fire return interval, and the current structure and composition of the system resulting from alterations to the disturbance regime. Low departure is considered to be within the natural (historical) range of variability, while moderate and high departures are outside. The relative risk of fire-caused losses of key ecosystem components increases as condition class designation increases.

Table 14. Fire Regime Condition Class for BLM-administered lands

Condition Class	Description	BLM Acres*	% of BLM Forested	Example of Typical Management
1	Fire regimes are within a historical range, and the risk of losing key ecosystem components is low. Vegetation attributes (species composition and structure) are intact and functioning within a historical range. Fires burning in CC1 lands pose little risk to the ecosystem and have positive effects to biodiversity, soil productivity, and hydrologic processes.	3,966	69%	Historical fire regime is replicated through periodic application of prescribed fire or through fire use.
2	Fire regimes have been moderately altered from their historical range. The risk of losing key ecosystem components is moderate. Fire frequencies have departed from historical frequencies by one or more return intervals (either increased or decreased) resulting in moderate changes to one or more of the following: fire size, intensity and severity, and landscape patterns. Vegetation attributes have been moderately altered from their historical range. Wildland fires burning in CC2 lands can have moderately negative impacts to species composition, soil conditions, and hydrologic processes.	56,266 (NOTE: Actual forested cover in CC2 is approx. 523 acres. The remainder is sagebrush/grassland)	9%	Moderate levels of restoration treatments are required, such as a combination of prescribed fire with mechanical/hand treatment.
3	Fire regimes have been significantly altered from their historical range. The risk of losing key ecosystem components is high. Fire frequencies have departed from historical frequencies by multiple return intervals resulting in dramatic changes to one or more of the following: fire size, intensity, severity, and landscape patterns. Vegetation attributes have been significantly altered from their historical range. Wildland fires burning in CC3 lands may eliminate desired ecosystem components, exacerbate the spread of unwanted non-native species, and result in dramatically different ecological effects compared to reference conditions.	1,292	22%	High levels of restoration treatments, such as mechanical treatments, are required before fire can be used to restore desired ecosystem function. Intensive efforts, which may include seeding, herbicide application, biomass removal, and other types of rehabilitation, are required for CC3 lands.
Current conditions are a function of the degree of departure from historical fire regimes resulting in alterations of key ecosystem components such as species composition, structural stage, stand age, and canopy closure. One or more of the following activities may have caused this departure: fire suppression, timber harvesting, grazing, introduction, and establishment of exotic plant species, insects or disease (introduced or native), or other past management activities (Lavery, Williams 2000).				

*The acreage calculation for each condition class is based on the hydrologic unit scale. Acreage discrepancies occur through calculations made in GIS.

The FRCC classifications for the RRLW based on the coarse-scale data are presented in Table 13. The data presented is the most current available and is valuable information to aid managers in estimating actual ground conditions. However, due to the limits of satellite-based imagery, the coarse-scale estimates presented in Table 13 may differ from site-specific assessments made by members of the IDT. For example, the coarse-scale assessments obtained through satellite imagery do not take into account finer scale factors influencing condition class such as recent insect and/or disease outbreak, individual stand structure and associated biodiversity issues.

Based on the coarse-scale FRCC analysis, site-specific FRCC assessments, and historic photos of the area, the lower to mid elevation forested portions of the Red Rock/Lima Watershed are moderately to severely departed from natural (historic) conditions.

Analysis, Issues and Recommendations

Forest health concerns include occurrence or high susceptibility for insect/disease outbreak, increased fuel loading, and departure from the historic range of variability (species composition, structure, density, etc.).

Issues

1. The physical characteristics of many sites, combined with the lack of natural disturbances, have allowed conifers to expand into grassland/sagebrush, riparian, and aspen communities.
2. Plant species composition, age class, and distribution are not within their historical range of variability for the forest and woodland communities.

Recommendations

1. Consider using prescribed fire, mechanical treatments, or other means to mitigate conifer establishment and domination in aspen clones, conifer encroachment into sagebrush sites and/or riparian areas, and address other site-specific concerns (particularly in Clark Canyon, Clark Canyon Isolated, Lima Peaks, Bell Canyon, and Little Sheep allotments).

General Recommendations for Watershed

1. Implement off highway vehicle (OHV) designations from Dillon RMP and rehabilitate closed roads and trails as necessary to discourage future motorized use of these routes.
2. Consider closing road that begins at the historic cabin and continues up to East Fork of Little Sheep Creek (Approximately 0.25 miles).
3. Incorporate 154 acres of unleased BLM land into adjacent BLM allotments in the Snowline region, near the Idaho State line.

Interdisciplinary Team Composition

Core IDT members for the RRLW Assessment include:

Ryan Martin, Rangeland Management Specialist - IDT leader
Kipper Blotkamp, Fuels Specialist
Pat Fosse, Assistant Field Manager – Renewable Resources
Brian Hockett, Rangeland Management Specialist
Bart Howells, Rangeland Management Specialist
Paul Hutchinson, Wildlife and Fisheries Biologist
Aly Piwowar, Forester

Support IDT members include:

Stephen Armiger, Hydrologist - Riparian, Soil, Water and Air Lead
Jason Strahl, Archeologist
James Roscoe, Wildlife Biologist
Michael Mooney, Weeds Specialist
Rick Waldrup, Outdoor Recreation Planner/Wilderness Specialist
Bob Gunderson, Geologist
Laurie Blinn, GIS Specialist
Joe Casey, Forester

Other specialists involved:

Mike Philbin, MSO Hydrologist and Riparian Program Lead
Robert Mitchell, Soil Scientist
Tim Bozorth, Dillon Field Manager
Brian Thrift, Rangeland Management Specialist
Brad Williams, Range Technician
Steve Lubinski, Range Technician
Dustin Anderson, Range Technician
Shane Trautner, Range Technician
Carina Rosterella, Wildlife Technician
Laura Cerruti, Wildlife Technician
Vickie Van Sickle, Wildlife Technician
Tanya Thrift, Range Technician
Emily Guiberson, Forestry SCEP

Other agency staff consulted or involved:

Dick Oswald, Fisheries Biologist, Montana Department of Fish, Wildlife and Parks
Bob Brannon, Game Biologist, Montana Department of Fish, Wildlife and Parks
Chuck Maddox, Rangeland Specialist, Department of Natural Resources and Conservation
Ken Scalzone, Soil Scientist, Natural Resource Conservation Service
Craig Fager, Game Biologist, Montana Department of Fish, Wildlife and Parks
Chuck Barrone, Forester, Department of Natural Resources and Conservation

Reyer Rens, Supervisory Rangeland Management Specialist, Forest Service Beaverhead---
Deerlodge National Forest – Dillon Ranger District

Katie Smith, Rangeland Management Specialist, Forest Service Beaverhead-Deerlodge National
Forest – Dillon Ranger District

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